

# Baumann™ 24000C Carbon Steel Little Scotty™ Control Valve

Baumann Little Scotty industrial control valves are intended for general utility service in pressure, flow, and temperature control applications. This compact carbon steel control valve is positioned to take advantage of the trend toward industrial grade requirements spanning general utility and special applications. These control valves exhibit low hysteresis and deadband, good control characteristics, tight shutoff, rugged construction, high performance packing, and easy maintainability. These attributes translate into reduced maintenance costs, reduced process variability, and increased process availability, resulting in lower long-term operating costs.

## Features

- Compact and light weight design reduces installed piping costs
  - ASME and EN end connections are available to meet your piping standards
  - High quality type 316 austenitic stainless steel trim materials
  - 416 stainless steel trim available
  - Dual plug and stem guiding provides increased stability during plug travel
  - Multiple trim capacity reductions available to meet changing process requirements
  - Epoxy powder-coated valve body and actuator with stainless steel fasteners for corrosion resistance
  - Multi-spring, field-reversible actuator with reduced deadband permits direct operation from remote signal devices
- Actuator and yoke can be removed from the valve assembly while maintaining packing integrity
  - Fisher® FIELDVUE™ digital valve controller available for remote calibration and diagnostics in facilities using the PlantWeb™ architecture



W9743

24000C Control Valve with Baumann 32 Actuator

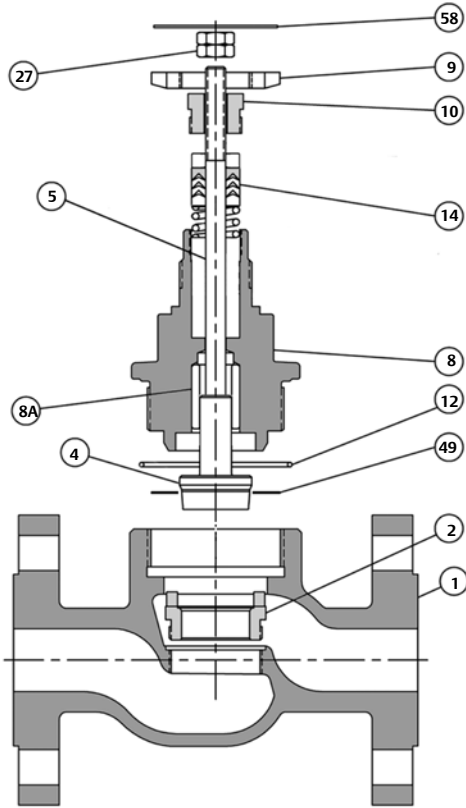


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24000C Control Valve with Baumann 32 Actuator and Fisher 3661 I/P Positioner



Figure 1. Baumann 24000C Valve Body Assembly with Standard PTFE Spring-Loaded Packing



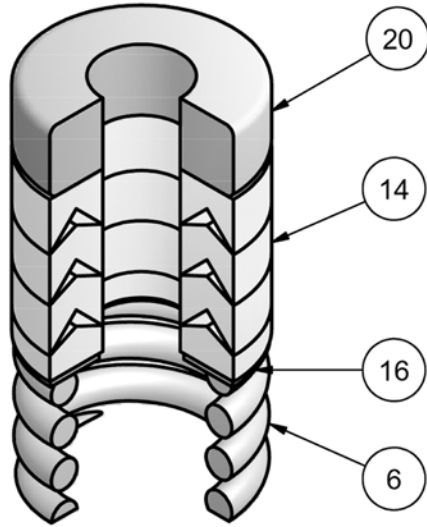
E1239-1

Table 1. Materials of Construction

| Key No. | Description                           | Material  |
|---------|---------------------------------------|---|
| 1       | Valve Body                            | Cast Carbon Steel (ASME SA216 Grade WCC and EN 10213 1.0619 Dual Certified) |
| 2       | Seat Ring                             | Standard ASTM A276 S31600 / S31603 Dual Certified                           |
|         |                                       | Optional ASTM A582 S41600 Condition T                                       |
| 4       | Plug (Metal Seat) Cv < 2.5            | Standard ASME SA479 S21800 Annealed   |
|         |                                       | Optional ASTM A582 S41600 Condition T                                       |
|         | Plug (Metal Seat) Cv > 4.0            | Standard ASTM A276 S31600 / S31603 Dual Certified                           |
|         | Optional ASTM A582 S41600 Condition T |   |
|         | Plug (Soft Seat)                      | ASTM A276 S31600 / S31603 with PTFE (Polytetrafluoroethylene) Insert        |
| 5       | Stem                                  | ASTM A276 S31600 Condition A  |
| 8       | Bonnet                                | Cast Carbon Steel (ASME SA216 and EN 10213 1.0619 Dual Certified)           |
| 8A      | Bonnet Bushing                        | ASTM A276 S44004, HT 56-60 HRC or ASTM A311 Class B Stressproof 62-65 HRC   |
| 9       | Drive Nut (Yoke)                      | S30400  |
| 10      | Packing Follower                      | ASTM A276 S31600 / S31603 Dual Certified                                    |
| 12      | O-Ring                                | FKM (Fluorocarbon)  |
| 14      | Packing                               | Standard Refer to figure 2, table 2, shown below                            |
|         |                                       | Optional Refer to figure 3, table 3, shown below                            |
| 27      | Locknuts                              | Stainless Steel (18-8 SST)  |
| 49      | Body Gasket                           | Standard Annealed Soft Copper   |
|         |                                       | Optional Graphite Grade GHR with 316 SST Insert                             |
| 58      | Travel Indicator                      | ASME SA240 S30400   |

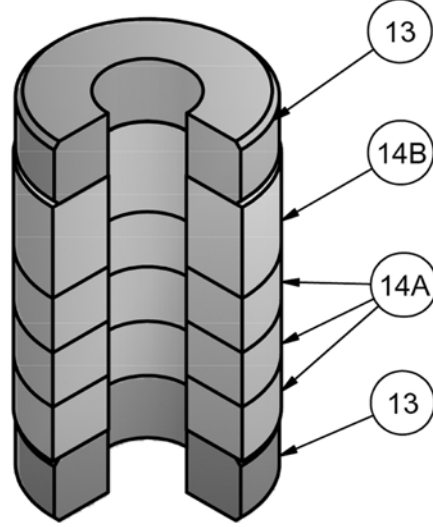
24000C Valve

Figure 2. Standard Spring Loaded PTFE V-Ring Packing Kit



E1240

Figure 3. Molded Graphite (Flexible Graphite) Packing Kit (Optional)



E1241

Table 2. Standard Spring Loaded PTFE V-Ring Packing Kit

| Key No. | Description | Material   |
|---------|-------------|--|
| 6       | Spring      | ASTM A313 S30200                                       |
| 14      | Packing Set | PTFE (Polytetrafluoroethylene)/ 25% carbon filled PTFE |
| 16      | Washer      | ASME SA240 S31600                                      |
| 20      | Spacer      | J-2000 (filled Polytetrafluoroethylene)                |

Table 3. Molded Graphite (Flexible Graphite) Packing Kit (Optional)

| Key No. | Description   | Material        |
|---------|---------------|-----------------|
| 13      | Bushings      | Carbon-Graphite |
| 14A     | Packing Rings | Graphite        |
| 14B     | Packing Ring  | Graphite        |

Table 4. Cv Values at 100% Plug Opening ( $K_v = 0.86 \times C_v$ )

| VALVE SIZE      | ORIFICE DIAMETER | PLUG TRAVEL | PLUG SERIES                |                   |                   |                                 |                |
|-----------------|------------------|-------------|----------------------------|-------------------|-------------------|---------------------------------|----------------|
|                 |                  |             | 102                        | 577               | 548 / 588         | 677                             | 648 / 688      |
| NPS             | inch             | inch        | Cv                         | Cv                | Cv                | Cv                              | Cv             |
| 1/2<br>3/4<br>1 | 0.25             | 0.5         | 0.02<br>0.05<br>0.1<br>0.2 | ---               | 0.2<br>0.5<br>1.0 | ---                             | 0.5<br>1.0     |
|                 | 0.375            | 0.5         | ---                        | 1.0<br>1.5<br>2.5 | 1.5<br>2.5        | 0.1<br>0.2<br>0.5<br>1.0<br>2.5 | 1.5<br>2.5     |
| 1/2             | 0.8125           | 0.5         | ---                        | 4<br>6            | 4<br>7.7          | 5                               | 4<br>6         |
| 3/4             | 0.8125           | 0.5         | ---                        | 4<br>7.5          | 4<br>10.1         | 5                               | 4<br>8         |
| 1               | 0.8125           | 0.5         | ---                        | 4<br>8.5          | 4<br>10.1         | 5                               | 4<br>9         |
|                 | 1.0625           | 0.5         | ---                        | 13                | 13.6              | ---                             | 13             |
| 1-1/2           | 1.25             | 0.75        | ---                        | 20                | 10<br>20          | 20                              | 10<br>20       |
|                 | 1.5              | 0.75        | ---                        | 10<br>17<br>28    | 10<br>17<br>32.9  | 10<br>17                        | 10<br>17<br>28 |
| 2               | 1.5              | 0.75        | ---                        | 10<br>17<br>28    | 10<br>17<br>32.9  | 10<br>17                        | 10<br>17<br>28 |
|                 | 2.0              | 0.75        | ---                        | 30                | 30<br>52.9        | 30<br>50                        | 30<br>50       |

Table 5. ISA Sizing Coefficients

| Series  | Cv Rating   | FL   | Fd                              | XT                   | KC   |
|---------|---|------|---------------------------------|----------------------|------|
| 102     | 0.2<br>0.04<br>0.09<br>0.17   | 0.95 | 0.06<br>0.09<br>0.013<br>0.18   | 0.76                 | 0.86 |
| 577     | 1<br>1.5<br>2.5<br>4<br>6<br>7.5<br>8.5<br>10<br>13<br>17<br>28<br>30                     | 0.9  | 1.46                            | 0.40<br>0.33<br>0.42 | 0.73 |
|         |   |      |                                 | 0.68                 |      |
| 548/588 | 0.2<br>0.5<br>1<br>1.5<br>2.5<br>4<br>7.7<br>10<br>13.6<br>17<br>20<br>30<br>32.9<br>52.9 | 0.98 | 0.28                            | 0.81                 | 0.94 |
|         |   | 0.9  | 0.4<br>0.33<br>0.42<br><br>0.46 | 0.68                 | 0.73 |
| 677     | 0.1<br>0.2<br>0.5<br>1<br>2.5<br>5<br>10<br>17<br>30<br>50                                | 0.9  | 0.08<br>0.12<br>0.19<br>0.27    | 0.68                 | 0.73 |
|         |   |      | 0.46                            |                      |      |
| 648/688 | 0.5<br>1<br>1.5<br>2.5<br>4<br>6<br>8<br>9<br>10<br>13<br>20<br>28<br>30<br>50            | 0.9  | 0.4<br>0.33<br>0.42             | 0.68                 | 0.73 |
|         |   |      | 0.46                            |                      |      |

Table 6. Technical Specifications

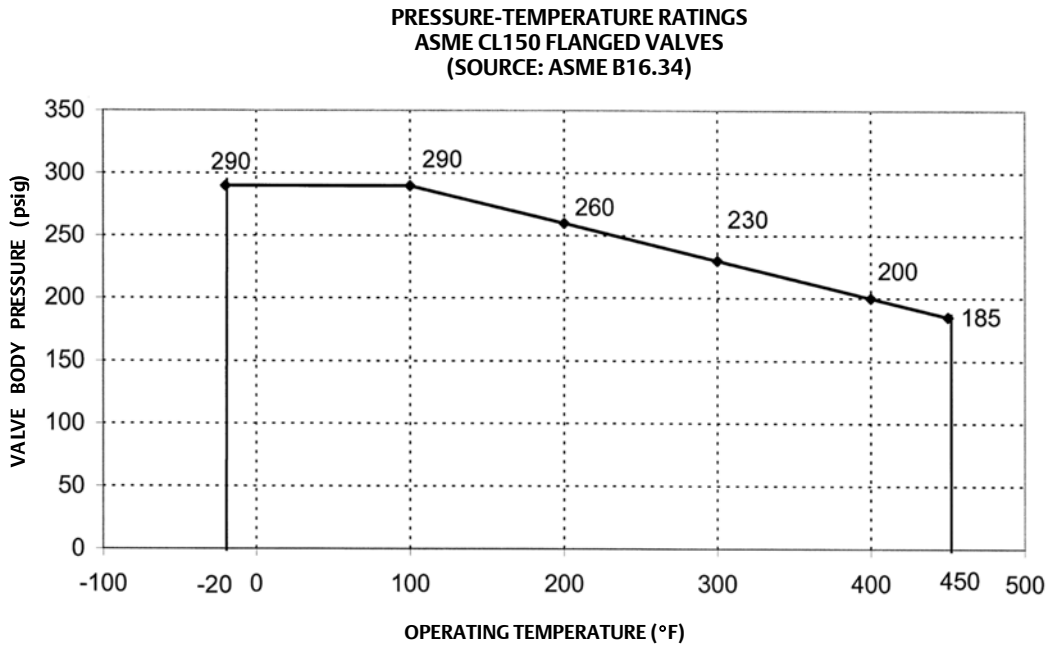
| VALVE TYPE              | EN  | ASME  |
|-------------------------|---|---|
| NOMINAL SIZE            | DN 15, 20, 25, 40, & 50                   | NPS 1/2, 3/4, 1, 1-1/2, & 2                     |
| END CONNECTIONS         | Mates with PN 10-40 Flanges per EN 1092-1 | Mates with ASME CL150 RF Flanges per ASME B16.5 |
| PRESSURE RATING         | PN 40 per EN 1092-2                       | ASME CL150 per ASME B16.34                      |
| SEAT PLUG SEALING       | Metal-to-Metal or PTFE Soft Seat          | Metal-to-Metal or PTFE Soft Seat                |
| FLANGE FINISH           | EN 500 to 300 Ra circular lay             | ASME 250 to 125 Ra circular lay                 |
| FACE-TO-FACE DIMENSIONS | Consistent with EN 558-1                  | Consistent with EN 588-2 (same as ISA S75.03)   |
| CHARACTERISTIC          | Equal Percentage or Linear                | Equal Percentage or Linear                      |
| TEMPERATURE LIMITS      | -29°C to 232°C (-20°F to 450°F)           | -29°C to 232°C (-20°F to 450°F)                 |

Table 7. Actuator Specifications

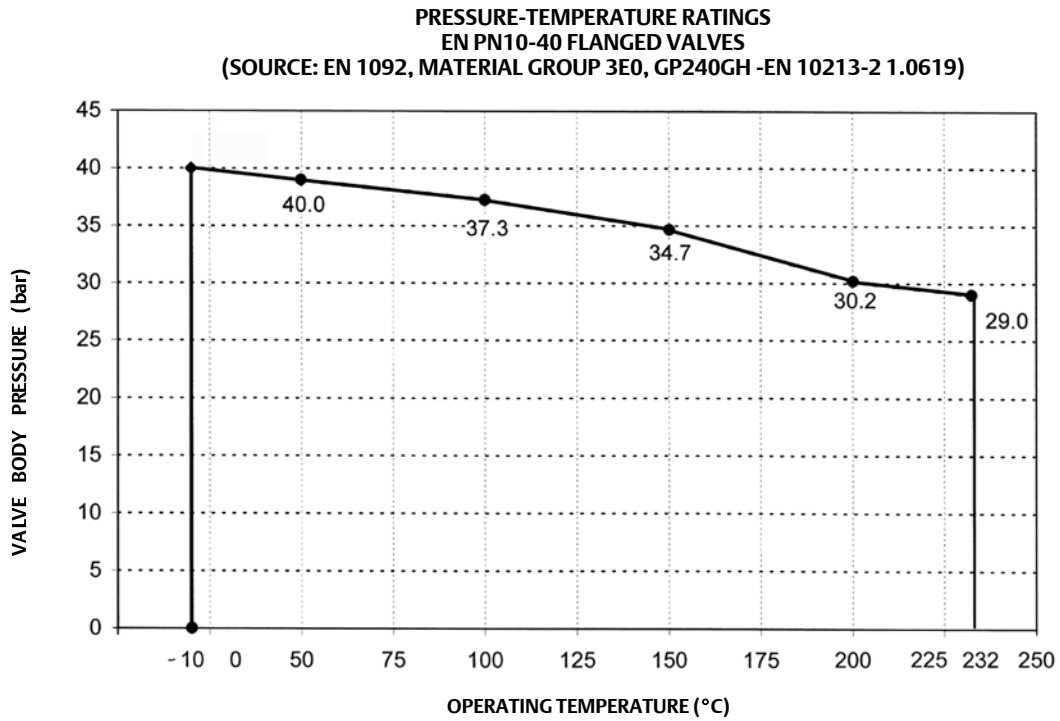
|                                   |  |
|-----------------------------------|--|
| TYPE                              | 32, 54, 70 Multi-Spring Diaphragm (Single Acting)                        |
| DIAPHRAGM AREA                    | 210, 350, 450 cm <sup>2</sup> / 32, 54, 70 in <sup>2</sup>               |
| AIR FAILURE                       | 32 and 54 Fails Open or Closed (Field Reversible) / 70 Fails Closed ONLY |
| TRAVEL <sup>(1)</sup>             | 12.7 or 19.1 mm / 0.50 or 0.75 inches                                    |
| AMBIENT TEMPERATURE RANGE         | -29°C to 71°C / -20°F to 160°F   |
| MAXIMUM AIR PRESSURE              | 2.4 barg / 35 psig   |
| DIAPHRAGM MATERIAL <sup>(2)</sup> | NBR (Nitrile) / TPES (Polyester Thermoplastic)                           |
| SPRING CASES                      | Steel, Powder Epoxy-Coated with Stainless Steel Fasteners                |
| YOKE                              | Ductile Iron, Powder Epoxy-Coated  |

1. Dual Travel Stops are available on Baumann 32 and 54 actuators. These are not field reversible.  
 2. Optional reinforced VMQ (Silicone) diaphragm with FKM (Fluorocarbon) O-ring actuator stem seal for higher ambient temperature conditions (-29°C to 121°C / -20°F to 250°F) is available with Baumann 32 and 54 actuators ONLY.

Figure 4. Baumann Pressure-Temperature Ratings



E1242



E1243

Table 8. Allowable Pressure Drops (bar)

| ORIFICE DIA. (mm) | PLUG TRAVEL (mm) | ACT TYPE | AIR-TO-OPEN ACTION |                                 |                          |                                      |                          |                    | AIR-TO-CLOSE ACTION             |                          |                                      |                          |  |  |
|-------------------|------------------|----------|--------------------|---------------------------------|--------------------------|--------------------------------------|--------------------------|--------------------|---------------------------------|--------------------------|--------------------------------------|--------------------------|--|--|
|                   |                  |          | BENCH RANGE (barg) | 0.2-1.0 barg SIGNAL TO ACTUATOR |                          | WITH POSITIONER 1.38 barg AIR SUPPLY |                          | BENCH RANGE (barg) | 0.2-1.0 barg SIGNAL TO ACTUATOR |                          | WITH POSITIONER 1.38 barg AIR SUPPLY |                          |  |  |
|                   |                  |          |                    | Max CL IV Shutoff Press.        | Max CL VI Shutoff Press. | Max CL IV Shutoff Press.             | Max CL VI Shutoff Press. |                    | Max CL IV Shutoff Press.        | Max CL VI Shutoff Press. | Max CL IV Shutoff Press.             | Max CL VI Shutoff Press. |  |  |
| 6.4               | 12.7             | 32       | 0.3-1.0            | 40.0 <sup>(1,2)</sup>           | ---                      | 40.0 <sup>(1,2)</sup>                | ---                      | 0.2-0.9            | 40.0 <sup>(1,2)</sup>           | ---                      | 40.0 <sup>(1,2)</sup>                | ---                      |  |  |
| 9.5               | 12.7             | 32       | 0.3-1.0            | 31.6 <sup>(2)</sup>             | 19.5 <sup>(2)</sup>      | 40.0 <sup>(1)</sup>                  | 40.0 <sup>(1)</sup>      | 0.2-0.9            | 40.0 <sup>(2)</sup>             | 17.3 <sup>(2)</sup>      | 40.0 <sup>(1,2)</sup>                | 40.0 <sup>(1,2)</sup>    |  |  |
| 20.6              | 12.7             | 32       | 0.3-1.0            | 7.9 <sup>(2)</sup>              | 1.4 <sup>(2)</sup>       | 15.8                                 | 9.3 <sup>(2)</sup>       | 0.2-0.9            | 7.3 <sup>(2)</sup>              | 0.8 <sup>(2)</sup>       | 25.7 <sup>(1)</sup>                  | 19.1                     |  |  |
|                   |                  | 32       | 0.5-1.0            | 14.5                            | 7.9 <sup>(2)</sup>       | 21.6 <sup>(1)</sup>                  | 15.2                     | 0.2-0.7            | 18.3                            | 11.8                     | 36.6 <sup>(1,2)</sup>                | 30.2 <sup>(1)</sup>      |  |  |
|                   |                  | 54       | 0.3-1.0            | 5.9 <sup>(2)</sup>              | ---                      | 17.6                                 | 11.2 <sup>(2)</sup>      | 0.2-0.9            | 11.7 <sup>(2)</sup>             | 5.2 <sup>(2)</sup>       | 40.0                                 | 34.4                     |  |  |
|                   |                  | 54       | 0.5-1.0            | 23.5 <sup>(1,2)</sup>           | 17.0                     | 35.3 <sup>(1,2)</sup>                | 28.8 <sup>(1)</sup>      | 0.2-0.7            | 29.2                            | 22.6 <sup>(1)</sup>      | 40.0 <sup>(1,2)</sup>                | 40.0 <sup>(1,2)</sup>    |  |  |
|                   |                  | 54       | 0.6-1.0            | 35.3 <sup>(1,2)</sup>           | 28.8 <sup>(1)</sup>      | 40.0                                 | 40.0 <sup>(1)</sup>      | ---                | ---                             | ---                      | ---                                  | ---                      |  |  |
| 27.0              | 12.7             | 32       | 0.3-1.0            | 4.8 <sup>(2)</sup>              | ---                      | 9.6                                  | 4.4                      | 0.2-0.9            | 4.4 <sup>(2)</sup>              | ---                      | 15.5                                 | 10.4                     |  |  |
|                   |                  | 32       | 0.5-1.0            | 8.8                             | 3.6 <sup>(2)</sup>       | 13.1                                 | 7.9                      | 0.2-0.7            | 11.1                            | 5.9 <sup>(2)</sup>       | 20.8 <sup>(1)</sup>                  | 17.0                     |  |  |
|                   |                  | 54       | 0.3-1.0            | 3.6 <sup>(2)</sup>              | ---                      | 10.7                                 | 5.5 <sup>(2)</sup>       | 0.2-0.9            | 7.1 <sup>(2)</sup>              | 1.9 <sup>(2)</sup>       | 24.1 <sup>(1)</sup>                  | 19.1                     |  |  |
|                   |                  | 54       | 0.5-1.0            | 14.3                            | 9.1                      | 28.6                                 | 16.2                     | 0.2-0.7            | 17.2                            | 12.6                     | 34.4 <sup>(1,2)</sup>                | 29.4 <sup>(1,2)</sup>    |  |  |
|                   |                  | 54       | 0.6-1.0            | 21.4                            | 16.2                     | 21.4                                 | 16.3 <sup>(1)</sup>      | ---                | ---                             | ---                      | ---                                  | ---                      |  |  |
| 31.8              | 19.1             | 32       | 0.3-1.0            | 3.45                            | ---                      | 6.96                                 | 2.48                     | 0.2-0.9            | 3.45                            | ---                      | 12.1                                 | 7.65                     |  |  |
|                   |                  | 32       | ---                | ---                             | ---                      | ---                                  | ---                      | 0.2-0.7            | 8.69                            | 4.20                     | 17.3                                 | 12.9                     |  |  |
|                   |                  | 54       | 0.3-1.0            | 5.24                            | ---                      | 10.5                                 | 6.07                     | 0.2-0.9            | 5.24                            | ---                      | 18.3                                 | 13.9                     |  |  |
|                   |                  | 54       | 0.5-0.9            | 10.9                            | 6.07                     | 15.7                                 | 11.3                     | 0.2-0.7            | 13.1                            | 8.69                     | 26.3 <sup>(1,2)</sup>                | 21.8 <sup>(1)</sup>      |  |  |
|                   |                  | 54       | 0.7-1.0            | 18.3                            | 13.9                     | 23.6 <sup>(1)</sup>                  | 19.2                     | ---                | ---                             | ---                      | ---                                  | ---                      |  |  |
|                   |                  | 70       | 0.7-1.0            | 24.9 <sup>(1)</sup>             | 20.5                     | 32.1 <sup>(1,2)</sup>                | 27.6 <sup>(1,2)</sup>    | ---                | ---                             | ---                      | ---                                  | ---                      |  |  |
| 38.1              | 19.1             | 32       | 0.3-1.0            | 2.4 <sup>(2)</sup>              | ---                      | 4.9                                  | 1.1                      | 0.2-0.9            | 2.3 <sup>(2)</sup>              | ---                      | 8.1                                  | 4.3                      |  |  |
|                   |                  | 32       | ---                | ---                             | ---                      | ---                                  | ---                      | 0.2-0.7            | 5.7                             | 2.0 <sup>(2)</sup>       | 11.5                                 | 7.7                      |  |  |
|                   |                  | 54       | 0.3-1.0            | 3.7                             | ---                      | 7.4                                  | 3.6 <sup>(2)</sup>       | 0.2-0.9            | 3.7 <sup>(2)</sup>              | ---                      | 12.8                                 | 9.0                      |  |  |
|                   |                  | 54       | 0.5-0.9            | 7.4                             | 3.6 <sup>(2)</sup>       | 11.1                                 | 7.3                      | 0.2-0.7            | 9.2                             | 5.4                      | 18.3                                 | 14.6                     |  |  |
|                   |                  | 54       | 0.7-1.0            | 10.9                            | 7.2                      | 14.6                                 | 10.8                     | ---                | ---                             | ---                      | ---                                  | ---                      |  |  |
|                   |                  | 70       | 0.7-1.0            | 17.7                            | 13.9                     | 22.7 <sup>(1)</sup>                  | 18.9                     | ---                | ---                             | ---                      | ---                                  | ---                      |  |  |
|                   |                  | 70       | 0.8-1.2            | ---                             | ---                      | 27.7 <sup>(1,2)</sup>                | 24.0 <sup>(1,2)</sup>    | ---                | ---                             | ---                      | ---                                  | ---                      |  |  |
| 50.8              | 19.1             | 32       | 0.3-1.0            | 1.4 <sup>(2)</sup>              | ---                      | 2.8                                  | ---                      | 0.2-0.9            | 1.3 <sup>(2)</sup>              | ---                      | 4.6                                  | 1.7 <sup>(2)</sup>       |  |  |
|                   |                  | 32       | ---                | ---                             | ---                      | ---                                  | ---                      | 0.2-0.7            | 3.3                             | 0.4 <sup>(2)</sup>       | 6.6                                  | 3.7                      |  |  |
|                   |                  | 54       | 0.3-1.0            | 2.1                             | ---                      | 4.2                                  | 1.3 <sup>(2)</sup>       | 0.2-0.9            | 2.1                             | ---                      | 7.4                                  | 4.5                      |  |  |
|                   |                  | 54       | 0.5-0.9            | 4.2                             | 1.4 <sup>(2)</sup>       | 6.3                                  | 3.4                      | 0.2-0.7            | 5.2                             | 2.3                      | 10.6                                 | 7.7                      |  |  |
|                   |                  | 54       | 0.7-1.0            | 6.3                             | 3.4                      | 8.3                                  | 5.4                      | ---                | ---                             | ---                      | ---                                  | ---                      |  |  |
|                   |                  | 70       | 0.7-1.0            | 10.1                            | 7.2                      | 13.0                                 | 10.1                     | ---                | ---                             | ---                      | ---                                  | ---                      |  |  |
|                   |                  | 70       | 0.8-1.2            | ---                             | ---                      | 15.9                                 | 13.1                     | ---                | ---                             | ---                      | ---                                  | ---                      |  |  |

1. The maximum shutoff pressure when using ENVIRO-SEAL™ packing is defined by:  $\Delta P = \text{Table Value} - [1112/(\text{Port Diameter})^2]$ . These table values should not be modified by this formula and the pressure shown in the table should be used for ENVIRO-SEAL packing.  
 2. The maximum shutoff pressure when using Flexible Graphite packing is defined by:  $\Delta P = \text{Table Value} - [5337/(\text{Port Diameter})^2]$ . These table values should not be modified by this formula and the pressure shown in the table should be used for Flexible Graphite packing.



24000C Valve

Table 9. Allowable Pressure Drops (psi)

| ORIFICE DIA. (in) | PLUG TRAVEL (in) | ACT TYPE | AIR-TO-OPEN ACTION |                              |                          |                                    |                          |                    | AIR-TO-CLOSE ACTION          |                          |                                    |                          |  |  |
|-------------------|------------------|----------|--------------------|------------------------------|--------------------------|------------------------------------|--------------------------|--------------------|------------------------------|--------------------------|------------------------------------|--------------------------|--|--|
|                   |                  |          | BENCH RANGE (psig) | 3-15 psig SIGNAL TO ACTUATOR |                          | WITH POSITIONER 20 psig AIR SUPPLY |                          | BENCH RANGE (psig) | 3-15 psig SIGNAL TO ACTUATOR |                          | WITH POSITIONER 20 psig AIR SUPPLY |                          |  |  |
|                   |                  |          |                    | Max CL IV Shutoff Press.     | Max CL VI Shutoff Press. | Max CL IV Shutoff Press.           | Max CL VI Shutoff Press. |                    | Max CL IV Shutoff Press.     | Max CL VI Shutoff Press. | Max CL IV Shutoff Press.           | Max CL VI Shutoff Press. |  |  |
| 0.25              | 0.50             | 32       | 5-15               | 290 <sup>(1,2)</sup>         | ---                      | 290 <sup>(1,2)</sup>               | ---                      | 3-13               | 290 <sup>(1,2)</sup>         | ---                      | 290 <sup>(1,2)</sup>               | ---                      |  |  |
| 0.375             | 0.50             | 32       | 5-15               | 290 <sup>(2)</sup>           | 278                      | 290 <sup>(1)</sup>                 | 290 <sup>(1)</sup>       | 3-13               | 290 <sup>(2)</sup>           | 278 <sup>(2)</sup>       | 290 <sup>(1,2)</sup>               | 290 <sup>(1,2)</sup>     |  |  |
| 0.8125            | 0.50             | 32       | 5-15               | 113 <sup>(2)</sup>           | 19 <sup>(2)</sup>        | 226                                | 132 <sup>(2)</sup>       | 3-13               | 113 <sup>(2)</sup>           | 19 <sup>(1,2)</sup>      | 290 <sup>(1)</sup>                 | 290                      |  |  |
|                   |                  | 32       | 7-15               | 226                          | 132 <sup>(2)</sup>       | 290 <sup>(1)</sup>                 | 245                      | 3-10               | 283                          | 188                      | 290 <sup>(1,2)</sup>               | 290 <sup>(1)</sup>       |  |  |
|                   |                  | 54       | 4-15               | 86 <sup>(2)</sup>            | ---                      | 257                                | 162 <sup>(2)</sup>       | 3-13               | 171 <sup>(2)</sup>           | 77 <sup>(2)</sup>        | 290 <sup>(1,2)</sup>               | 290 <sup>(1,2)</sup>     |  |  |
|                   |                  | 54       | 7-15               | 290 <sup>(1,2)</sup>         | 248                      | 290 <sup>(1,2)</sup>               | 290 <sup>(1)</sup>       | 3-10               | 290 <sup>(1)</sup>           | 290 <sup>(1)</sup>       | 290 <sup>(1,2)</sup>               | 290 <sup>(1,2)</sup>     |  |  |
|                   |                  | 54       | 9-15               | 290 <sup>(1,2)</sup>         | 290 <sup>(1)</sup>       | 290 <sup>(1,2)</sup>               | 290 <sup>(1)</sup>       | ---                | ---                          | ---                      | ---                                | ---                      |  |  |
| 1.0625            | 0.50             | 32       | 5-15               | 68 <sup>(2)</sup>            | ---                      | 137                                | 62 <sup>(2)</sup>        | 3-13               | 68 <sup>(2)</sup>            | ---                      | 239                                | 165                      |  |  |
|                   |                  | 32       | 7-15               | 137                          | 62 <sup>(2)</sup>        | 205                                | 130                      | 3-10               | 171                          | 96 <sup>(2)</sup>        | 290 <sup>(1)</sup>                 | 267                      |  |  |
|                   |                  | 54       | 4-15               | 52                           | ---                      | 155                                | 81 <sup>(2)</sup>        | 3-13               | 104 <sup>(2)</sup>           | 29 <sup>(2)</sup>        | 290 <sup>(1)</sup>                 | 288                      |  |  |
|                   |                  | 54       | 7-15               | 207                          | 132                      | 290                                | 236                      | 3-10               | 259                          | 184                      | 290 <sup>(1,2)</sup>               | 290 <sup>(1,2)</sup>     |  |  |
|                   |                  | 54       | 9-15               | 290                          | 236                      | 290 <sup>(1,2)</sup>               | 290 <sup>(1)</sup>       | ---                | ---                          | ---                      | ---                                | ---                      |  |  |
| 1.25              | 0.75             | 32       | 5-15               | 50                           | ---                      | 101                                | 36                       | 3-13               | 50                           | ---                      | 176                                | 111                      |  |  |
|                   |                  | 32       | ---                | ---                          | ---                      | ---                                | ---                      | 3-10               | 126                          | 61                       | 251                                | 187                      |  |  |
|                   |                  | 54       | 5-15               | 76                           | ---                      | 152                                | 88                       | 3-13               | 76                           | ---                      | 266                                | 202                      |  |  |
|                   |                  | 54       | 7-13               | 152                          | 88                       | 228                                | 164                      | 3-10               | 190                          | 126                      | 290 <sup>(1,2)</sup>               | 290 <sup>(1)</sup>       |  |  |
|                   |                  | 54       | 10-14              | 266                          | 202                      | 290 <sup>(1)</sup>                 | 278                      | ---                | ---                          | ---                      | ---                                | ---                      |  |  |
|                   |                  | 70       | 10-15              | 290 <sup>(1)</sup>           | 290                      | 290 <sup>(1,2)</sup>               | 290 <sup>(1,2)</sup>     | ---                | ---                          | ---                      | ---                                | ---                      |  |  |
| 1.5               | 0.75             | 32       | 5-15               | 35 <sup>(2)</sup>            | ---                      | 71                                 | 16                       | 3-13               | 35 <sup>(2)</sup>            | ---                      | 124                                | 69                       |  |  |
|                   |                  | 32       | ---                | ---                          | ---                      | ---                                | ---                      | 3-10               | 89                           | 34 <sup>(2)</sup>        | 177                                | 123                      |  |  |
|                   |                  | 54       | 5-15               | 54                           | ---                      | 107                                | 53 <sup>(2)</sup>        | 3-13               | 54 <sup>(2)</sup>            | ---                      | 188                                | 133                      |  |  |
|                   |                  | 54       | 7-13               | 107                          | 53 <sup>(2)</sup>        | 161                                | 106                      | 3-10               | 134                          | 80                       | 269                                | 214                      |  |  |
|                   |                  | 54       | 10-14              | 188                          | 133                      | 242                                | 187                      | ---                | ---                          | ---                      | ---                                | ---                      |  |  |
|                   |                  | 70       | 10-15              | 256                          | 201                      | 290 <sup>(1)</sup>                 | 274                      | ---                | ---                          | ---                      | ---                                | ---                      |  |  |
|                   |                  | 70       | 12-18              | ---                          | ---                      | 290 <sup>(1,2)</sup>               | 290 <sup>(1,2)</sup>     | ---                | ---                          | ---                      | ---                                | ---                      |  |  |
| 2.0               | 0.75             | 32       | 5-15               | 20 <sup>(2)</sup>            | ---                      | 41                                 | ---                      | 3-13               | 20 <sup>(2)</sup>            | ---                      | 71                                 | 29 <sup>(2)</sup>        |  |  |
|                   |                  | 32       | ---                | ---                          | ---                      | ---                                | ---                      | 3-10               | 51                           | 9 <sup>(2)</sup>         | 102                                | 60                       |  |  |
|                   |                  | 54       | 5-15               | 31                           | ---                      | 62                                 | 20 <sup>(2)</sup>        | 3-13               | 31                           | ---                      | 108                                | 66                       |  |  |
|                   |                  | 54       | 7-13               | 62                           | 20 <sup>(2)</sup>        | 92                                 | 51                       | 3-10               | 77                           | 35                       | 154                                | 112                      |  |  |
|                   |                  | 54       | 10-14              | 108                          | 66                       | 139                                | 97                       | ---                | ---                          | ---                      | ---                                | ---                      |  |  |
|                   |                  | 70       | 10-15              | 147                          | 105                      | 189                                | 147                      | ---                | ---                          | ---                      | ---                                | ---                      |  |  |
|                   |                  | 70       | 12-18              | ---                          | ---                      | 230                                | 189                      | ---                | ---                          | ---                      | ---                                | ---                      |  |  |

1. The maximum shutoff pressure when using ENVIRO-SEAL packing is defined by:  $\Delta P = \text{Table Value} - [25/(\text{Port Diameter})^2]$ . These table values should not be modified by this formula and the pressure shown in the table should be used for ENVIRO-SEAL packing.  
 2. The maximum shutoff pressure when using Flexible Graphite packing is defined by:  $\Delta P = \text{Table Value} - [120/(\text{Port Diameter})^2]$ . These table values should not be modified by this formula and the pressure shown in the table should be used for Flexible Graphite packing.

Table 10. Valve Dimensions

| VALVE SIZE |       | A FACE-TO-FACE |     |       |       | B BONNET |     |
|------------|-------|----------------|-----|-------|-------|----------|-----|
| EN         | ASME  | EN 10-40       |     | CL150 |       | in       | mm  |
| DN         | NPS   | mm             | in  | mm    | in    |          |     |
| 15         | 1/2   | 130            | 5.1 | 184   | 7.25  | 3.2      | 80  |
| 20         | 3/4   | 150            | 5.9 | 184   | 7.25  | 3.2      | 80  |
| 25         | 1     | 160            | 6.3 | 184   | 7.25  | 3.3      | 83  |
| 40         | 1-1/2 | 200            | 7.9 | 222   | 8.75  | 3.9      | 99  |
| 50         | 2     | 230            | 9.1 | 254   | 10.00 | 4.2      | 107 |

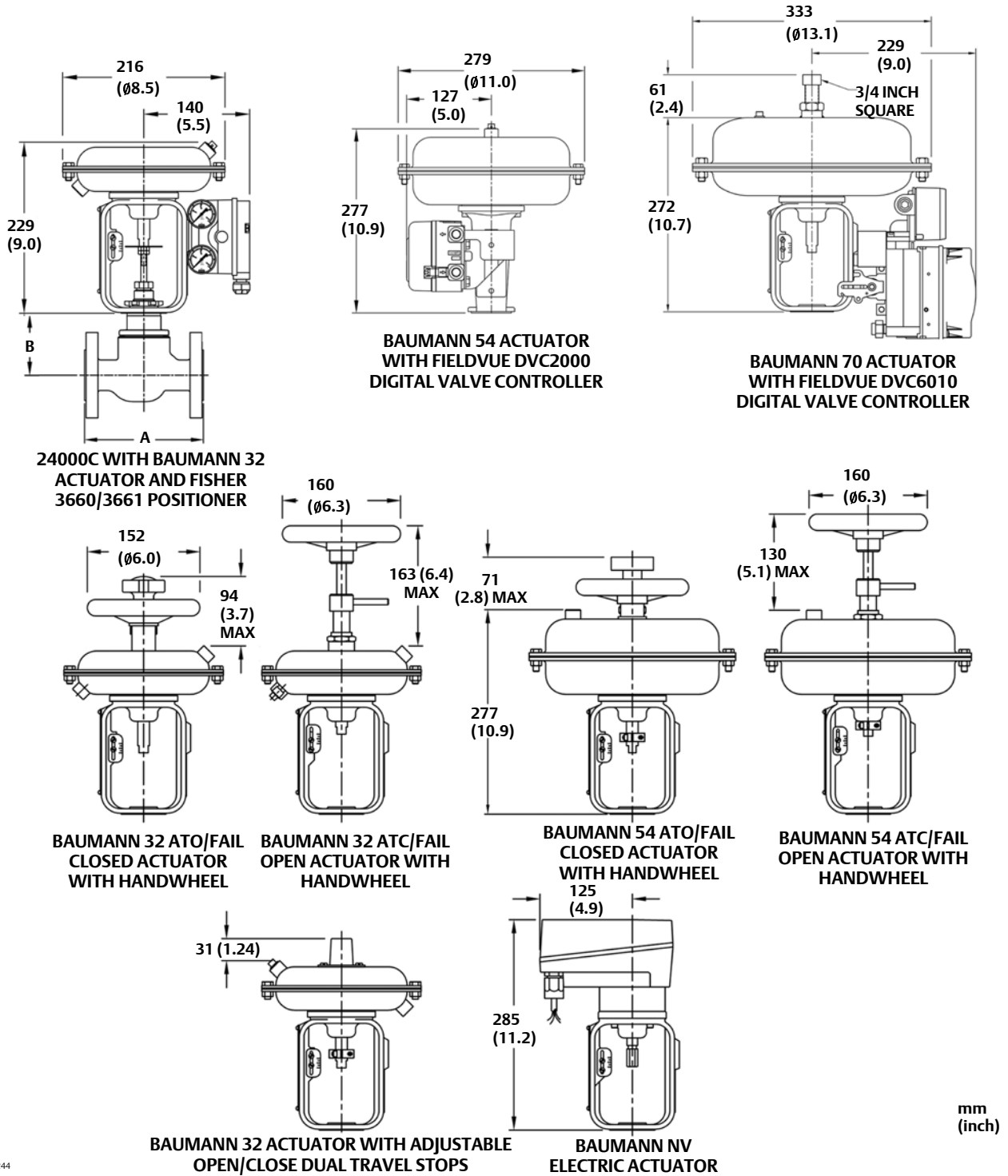
Table 11. Valve Assembly Weights

| VALVE SIZE |       | WEIGHTS |    |
|------------|-------|---------|----|
| EN         | ASME  | kg      | lb |
| DN         | NPS   |         |    |
| 15         | 1/2   | 3.9     | 9  |
| 20         | 3/4   | 4.8     | 11 |
| 25         | 1     | 6.4     | 14 |
| 40         | 1-1/2 | 10      | 22 |
| 50         | 2     | 15      | 33 |

Table 12. Actuator Weights

| ACTUATOR TYPE                            | WEIGHTS |     |
|--|---------|-----|
|  | kg      | lb  |
| 32                                       | 4.5     | 10  |
| 54                                       | 11.3    | 25  |
| 70                                       | 15.4    | 34  |
| MV1020                                   | 10      | 22  |
| VA1020                                   | 13.6    | 30  |
| NV24-MFT (non spring return)             | 1.5     | 3.3 |
| NVF24-MFT or NVF24-MFT-E (spring return) | 1.8     | 4   |

Figure 5. Dimensional Drawings



E1244

Note: Actuator removal requires 115 mm (4-1/2 inches) vertical clearance.

Table 13. Pneumatic Actuators

| Actuator Type |
|---------------|
| 32            |
| 54            |
| 70            |

Table 14. Electric Actuators<sup>(1)</sup>

| Actuator Type       | Travel |
|---------------------|--------|
| MV1020              | n/a    |
| VA1020              | n/a    |
| NV <sup>(2)</sup>   | 50     |
| NVF <sup>(3)</sup>  | 75     |
| NVFE <sup>(4)</sup> |        |

1. Refer to 52.1: NVACTION, Baumann NV Electric Actuator with 24000 Control Valves, D103326X012 for details.  
 2. NV24-MFT = Non Spring Return  
 3. NVF24-MFT = Spring Return - Fail Open  
 4. NV24-MFT-E = Spring Return - Fail Closed

Table 15. Model Numbering System

| Actuator Type <sup>(1)</sup> | 24                |             |                               | C            |                     |
|------------------------------|-------------------|-------------|-------------------------------|--------------|---------------------|
|                              | Valve Body Series | Plug Series | Characteristic                | Seat Leakage | Valve Body Material |
|                              |                   | 102         | Linear / Metal Seat           | IV           | C<br>Carbon Steel   |
|                              |                   | 577         | Equal % / PTFE Seat           | VI           |                     |
|                              |                   | 548         | Equal % / Metal Seat (S41600) | IV           |                     |
|                              |                   | 588         | Equal % / Metal Seat (S31600) | IV           |                     |
|                              |                   | 677         | Linear / PTFE Seat            | VI           |                     |
|                              |                   | 648         | Linear / Metal Seat (S41600)  | IV           |                     |
|                              |                   | 688         | Linear / Metal Seat (S41600)  | IV           |                     |

1. Choose from tables 13 and 14 above.

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