

TYPE 301 — CAST IRON BODY, STAINLESS STEEL TRIM (SEMI-NOZZLE)  
 TYPE 401 — CAST STEEL BODY, STAINLESS STEEL TRIM (FULL NOZZLE)  
 TYPE 402 — CAST STEEL BODY, STAINLESS STEEL TRIM (FULL NOZZLE)  
 SAFETY VALVES

Steam, Air,  
 Non-Hazardous Gas Service

**Pressure & Temperature Limits:**

**Type 301** 250 psig–406°F.  
**Type 401** 505 psig–750°F.  
**Type 402** 1000 psig<sup>1</sup>–750°F.

**Applications:**

- Steam boilers and generators
- Pressure reducing stations
- Air/gas compressors—reciprocating or rotary
- Pressure vessels—including tanks, receivers, intercoolers, oil-gas separators, lines.

**Features: Type 301:**

Heavy duty construction of high quality cast iron with stainless steel semi-nozzle trim. Bolted bonnet design for easy maintenance. Seats lapped to optical flatness. Dual control rings offer easy adjustability for precision opening with minimum preopen or simmer and exact blow-down control. Heavy duty lift lever assembly. Every valve 100% tested/inspected for pressure setting, blow-down and leakage. All adjustments are factory sealed to prevent tampering or dis-assembly.

**Type 301**—Cast iron. Enclosed spring. Stainless steel trim. ANSI 250# inlet flange and ANSI 125# outlet flange.

**Features: Type 401–402:**

Heavy duty construction of high quality cast steel with stainless steel full-nozzle trim. Steel yoke incorporates a cover-shield for guiding surfaces and provides for fully exposed spring. Other features are the same as the Type 301.

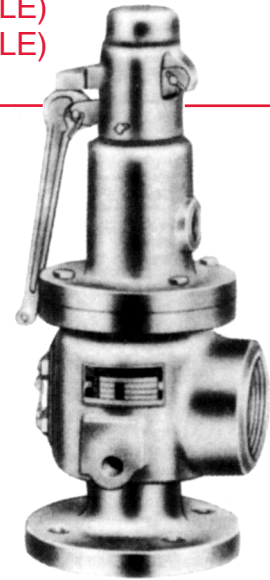
<sup>1</sup>Note: Maximum set pressure for Type 402—

|                  |           |
|------------------|-----------|
| F thru M orifice | 1000 psig |
| N and P orifice  | 750 psig  |
| Q orifice        | 600 psig  |

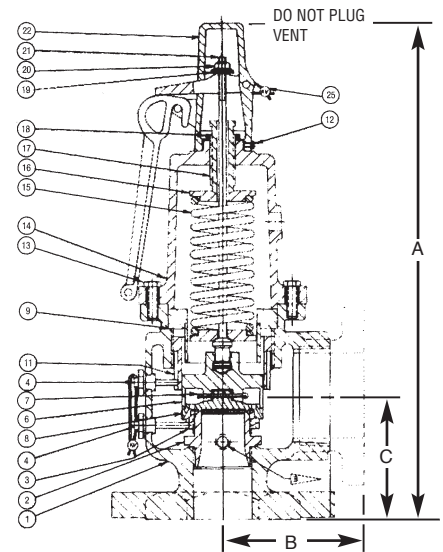
**Type 401**—Cast steel. Exposed spring. Full nozzle with stainless steel trim. ANSI 300# inlet flange and 150# outlet flange.

**Type 402**—Same as Type 401 except ANSI 600# inlet flange and 150# outlet flange.

**Available:**  
**Drip Pan Elbows, page 15**



TYPE 301



TYPE 301

**PARTS AND MATERIALS — TYPE 301**

| No. | Part Name               | Material        | No. | Part Name              | Material     |
|-----|-------------------------|-----------------|-----|------------------------|--------------|
| 1   | Body                    | Iron            | 15  | Spring                 | Steel Plated |
| 2   | Semi-Nozzle             | Stainless Steel | 16  | Step-Spring            | Steel Plated |
| 3   | Warn Ring               | Bronze          | 17  | Screw—Compression      | Brass        |
| 4   | Warn Ring Pin/Guide Pin | Brass           | 18  | Lock Nut (Comp. Screw) | Steel Plated |
| 6   | Disc Holder             | Bronze          | 19  | Lifting Disc           | Steel        |
| 7   | Cotter Pin (Disc)       | Stainless Steel | 20  | Nut (Lifting Disc)     | Steel        |
| 8   | Disc                    | Stainless Steel | 21  | Stem                   | Steel Plated |
| 9   | Lift Stop <sup>1</sup>  | Steel           | 22  | Cad Assembly           | Iron         |
| 11  | Guide                   | Bronze          | 22A | Lever                  | Iron         |
| 12  | Screw (Cap)             | Steel Plated    | 22B | Yoke (Lift)            | Iron         |
| 13  | Bolt (Body)             | Steel Plated    | 22C | Pins (Lever/Lift Yoke) | Steel        |
| 14  | Bonnet                  | Iron            | 25  | Seal                   | Lead & Wire  |

<sup>1</sup>Lift Stop furnished in Low Pressure Valves only.



## STEAM/AIR CAPACITIES—TYPES 301

To correct capacities for superheat or temperature other than 60°F, consult factory ASME Standard-N.B. Certified

| Orifice Area | J<br>1.287 Sq. In.        |                            |                      | K<br>1.838 Sq. In.        |                            |                      | L<br>2.853 Sq. In.        |                            |                      | M<br>3.60 Sq. In.         |                            |                      | N<br>4.34 Sq. In.         |                            |                      | P<br>6.38 Sq. In.         |                            |                      | Q<br>11.05 Sq. In.        |                            |                      | R<br>16.0 Sq. In.         |                            |                      |
|--------------|---------------------------|----------------------------|----------------------|---------------------------|----------------------------|----------------------|---------------------------|----------------------------|----------------------|---------------------------|----------------------------|----------------------|---------------------------|----------------------------|----------------------|---------------------------|----------------------------|----------------------|---------------------------|----------------------------|----------------------|---------------------------|----------------------------|----------------------|
|              | Lbs./Hr. Steam<br>3% Acc. | Lbs./Hr. Steam<br>10% Acc. | SCFM Air<br>10% Acc. | Lbs./Hr. Steam<br>3% Acc. | Lbs./Hr. Steam<br>10% Acc. | SCFM Air<br>10% Acc. | Lbs./Hr. Steam<br>3% Acc. | Lbs./Hr. Steam<br>10% Acc. | SCFM Air<br>10% Acc. | Lbs./Hr. Steam<br>3% Acc. | Lbs./Hr. Steam<br>10% Acc. | SCFM Air<br>10% Acc. | Lbs./Hr. Steam<br>3% Acc. | Lbs./Hr. Steam<br>10% Acc. | SCFM Air<br>10% Acc. | Lbs./Hr. Steam<br>3% Acc. | Lbs./Hr. Steam<br>10% Acc. | SCFM Air<br>10% Acc. | Lbs./Hr. Steam<br>3% Acc. | Lbs./Hr. Steam<br>10% Acc. | SCFM Air<br>10% Acc. | Lbs./Hr. Steam<br>3% Acc. | Lbs./Hr. Steam<br>10% Acc. | SCFM Air<br>10% Acc. |
| 10           | 1453                      | 1691                       | 602                  | 2077                      | 2390                       | 851                  | 3220                      | 3708                       | 1320                 | 4063                      | 4697                       | 1672                 | 4898                      | 5634                       | 2005                 | 7201                      | 8289                       | 2951                 | 12466                     | 14408                      | 5128                 | 17951                     | 20886                      | 7434                 |
| 15           | 1752                      | 1996                       | 710                  | 2505                      | 2821                       | 1004                 | 3883                      | 4378                       | 1558                 | 4900                      | 5545                       | 1974                 | 5908                      | 6651                       | 2367                 | 8684                      | 9786                       | 3483                 | 15034                     | 17008                      | 6054                 | 21648                     | 24656                      | 8776                 |
| 20           | 2051                      | 2301                       | 819                  | 2932                      | 3253                       | 1158                 | 4547                      | 5047                       | 1796                 | 5737                      | 6393                       | 2276                 | 6917                      | 7668                       | 2729                 | 10168                     | 11282                      | 4016                 | 17602                     | 19609                      | 6960                 | 25346                     | 28426                      | 10118                |
| 25           | 2350                      | 2607                       | 928                  | 3360                      | 3684                       | 1311                 | 5210                      | 5716                       | 2035                 | 6574                      | 7241                       | 2577                 | 7926                      | 8685                       | 3091                 | 11651                     | 12778                      | 4548                 | 20171                     | 22209                      | 7905                 | 29044                     | 32196                      | 11460                |
| 30           | 2650                      | 2912                       | 1036                 | 3788                      | 4116                       | 1465                 | 5874                      | 6386                       | 2273                 | 7411                      | 8089                       | 2879                 | 8935                      | 9702                       | 3453                 | 13135                     | 14274                      | 5081                 | 22739                     | 24810                      | 8831                 | 32742                     | 35966                      | 12802                |
| 35           | 2949                      | 3247                       | 1156                 | 4216                      | 4590                       | 1634                 | 6537                      | 7122                       | 2535                 | 8248                      | 9022                       | 3211                 | 9944                      | 10821                      | 3852                 | 14618                     | 15920                      | 5667                 | 25307                     | 27671                      | 9849                 | 36440                     | 40113                      | 14278                |
| 40           | 3248                      | 3583                       | 1275                 | 4644                      | 5065                       | 1803                 | 7200                      | 7858                       | 2797                 | 9085                      | 9955                       | 3543                 | 10953                     | 11940                      | 4250                 | 16101                     | 17566                      | 6253                 | 27875                     | 30532                      | 10867                | 40138                     | 44260                      | 15754                |
| 45           | 3547                      | 3919                       | 1395                 | 5071                      | 5539                       | 1972                 | 7864                      | 8594                       | 3059                 | 9922                      | 10887                      | 3875                 | 11962                     | 13058                      | 4648                 | 17585                     | 19212                      | 6838                 | 30443                     | 33392                      | 11886                | 43835                     | 48407                      | 17230                |
| 50           | 3847                      | 4255                       | 1514                 | 5499                      | 6014                       | 2141                 | 8527                      | 9331                       | 3321                 | 10760                     | 11820                      | 4207                 | 12971                     | 14177                      | 5046                 | 19068                     | 20858                      | 7424                 | 33011                     | 36253                      | 12904                | 47533                     | 52554                      | 18706                |
| 60           | 4445                      | 4926                       | 1753                 | 6355                      | 6963                       | 2478                 | 9854                      | 10803                      | 3845                 | 12434                     | 13685                      | 4871                 | 14989                     | 16414                      | 5843                 | 22035                     | 24150                      | 8596                 | 38147                     | 41974                      | 14940                | 54929                     | 60848                      | 21658                |
| 70           | 5043                      | 5598                       | 1992                 | 7211                      | 7912                       | 2816                 | 11180                     | 12276                      | 4369                 | 14108                     | 15551                      | 5535                 | 17008                     | 18652                      | 6639                 | 25002                     | 27442                      | 9768                 | 43283                     | 47696                      | 16977                | 62324                     | 69142                      | 24611                |
| 75           | 5343                      | 5933                       | 2112                 | 7638                      | 8387                       | 2985                 | 11844                     | 13012                      | 4632                 | 14945                     | 16484                      | 5867                 | 18017                     | 19771                      | 7037                 | 26485                     | 29088                      | 10353                | 45851                     | 50556                      | 17995                | 66022                     | 73289                      | 26087                |
| 80           | 5642                      | 6269                       | 2231                 | 8066                      | 8861                       | 3154                 | 12507                     | 13748                      | 4894                 | 15782                     | 17416                      | 6199                 | 19026                     | 20889                      | 7435                 | 27969                     | 30733                      | 10939                | 48419                     | 53417                      | 19013                | 69720                     | 77436                      | 27563                |
| 90           | 6240                      | 6941                       | 2470                 | 8932                      | 9810                       | 3492                 | 13834                     | 15221                      | 5418                 | 17456                     | 19282                      | 6863                 | 21044                     | 23127                      | 8232                 | 30936                     | 34025                      | 12111                | 53555                     | 59139                      | 21050                | 77116                     | 85730                      | 30515                |
| 100          | 6839                      | 7612                       | 2709                 | 9777                      | 10759                      | 3830                 | 15160                     | 16694                      | 5942                 | 19130                     | 21147                      | 7527                 | 23062                     | 25364                      | 9028                 | 33902                     | 37317                      | 13283                | 58691                     | 64860                      | 23086                | 84511                     | 94025                      | 33467                |
| 110          | 7437                      | 8284                       | 2948                 | 10633                     | 11708                      | 4168                 | 16487                     | 18166                      | 6466                 | 20804                     | 23012                      | 8191                 | 25080                     | 27602                      | 9825                 | 36869                     | 40609                      | 14454                | 63828                     | 70581                      | 25123                | 91907                     | 102319                     | 36419                |
| 120          | 8036                      | 8955                       | 3187                 | 11489                     | 12658                      | 4505                 | 17814                     | 19639                      | 6990                 | 22478                     | 24878                      | 8855                 | 27098                     | 29839                      | 10621                | 39836                     | 43901                      | 15626                | 68964                     | 76303                      | 27159                | 99303                     | 110613                     | 39372                |
| 125          | 8335                      | 9291                       | 3307                 | 11917                     | 13132                      | 4674                 | 18477                     | 20375                      | 7252                 | 23315                     | 25811                      | 9187                 | 28108                     | 30958                      | 11019                | 41319                     | 45547                      | 16212                | 71532                     | 79164                      | 28178                | 103001                    | 114760                     | 40848                |
| 130          | 8634                      | 9626                       | 3426                 | 12344                     | 13607                      | 4843                 | 19140                     | 21111                      | 7514                 | 24152                     | 26743                      | 9519                 | 29117                     | 32076                      | 11417                | 42803                     | 47192                      | 16798                | 74100                     | 82024                      | 29196                | 106698                    | 118907                     | 42324                |
| 140          | 9233                      | 10298                      | 3665                 | 13200                     | 14556                      | 5181                 | 20467                     | 22585                      | 8039                 | 25826                     | 28609                      | 10183                | 31135                     | 34314                      | 12214                | 45770                     | 50484                      | 17969                | 79236                     | 87746                      | 31232                | 114094                    | 127201                     | 45276                |
| 150          | 9831                      | 10969                      | 3904                 | 14056                     | 15505                      | 5519                 | 21794                     | 24056                      | 8563                 | 27500                     | 30474                      | 10847                | 33153                     | 36551                      | 13010                | 48736                     | 53776                      | 19141                | 84372                     | 93467                      | 33269                | 121490                    | 135495                     | 48228                |
| 160          | 10430                     | 11641                      | 4143                 | 14911                     | 16454                      | 5857                 | 23121                     | 25529                      | 9087                 | 29174                     | 32340                      | 11511                | 35171                     | 38789                      | 13806                | 51703                     | 57068                      | 20313                | 89508                     | 99189                      | 35305                | 128885                    | 143789                     | 51180                |
| 170          | 11028                     | 12312                      | 4382                 | 15767                     | 17403                      | 6194                 | 24447                     | 27002                      | 9611                 | 30848                     | 34205                      | 12175                | 37189                     | 41026                      | 14603                | 54670                     | 60360                      | 21485                | 94644                     | 104910                     | 37342                | 136281                    | 152083                     | 54133                |
| 175          | 11328                     | 12648                      | 4502                 | 16195                     | 17878                      | 6363                 | 25111                     | 27738                      | 9873                 | 31685                     | 35138                      | 12507                | 38198                     | 42145                      | 15001                | 56153                     | 62006                      | 22070                | 97212                     | 107771                     | 38360                | 139979                    | 156230                     | 55609                |
| 180          | 11627                     | 12984                      | 4621                 | 16623                     | 18352                      | 6532                 | 25774                     | 28474                      | 10135                | 32522                     | 36070                      | 12839                | 39208                     | 43263                      | 15399                | 57637                     | 63651                      | 22656                | 99780                     | 110631                     | 39378                | 143677                    | 160377                     | 57085                |
| 190          | 12225                     | 13655                      | 4860                 | 17478                     | 19301                      | 6870                 | 27101                     | 29947                      | 10659                | 34196                     | 37936                      | 13503                | 41226                     | 45501                      | 16196                | 60604                     | 66943                      | 23828                | 104917                    | 116353                     | 41415                | 151072                    | 168671                     | 60037                |
| 200          | 12824                     | 14327                      | 5099                 | 18334                     | 20250                      | 7208                 | 28427                     | 31419                      | 11183                | 35870                     | 39801                      | 14167                | 43244                     | 47738                      | 16992                | 63570                     | 70235                      | 25000                | 110053                    | 122074                     | 43451                | 158468                    | 176965                     | 62989                |
| 210          | 13422                     | 14998                      | 5338                 | 19189                     | 21199                      | 7546                 | 29754                     | 32892                      | 11708                | 37545                     | 41667                      | 14831                | 45262                     | 49976                      | 17788                | 66537                     | 73527                      | 26171                | 115189                    | 127796                     | 45488                | 165864                    | 185259                     | 65941                |
| 220          | 14021                     | 15670                      | 5578                 | 20045                     | 22149                      | 7884                 | 31081                     | 34364                      | 12232                | 39219                     | 43532                      | 15495                | 47280                     | 52213                      | 18585                | 69504                     | 76819                      | 27343                | 120325                    | 133517                     | 47524                | 173259                    | 193553                     | 69894                |
| 225          | 14320                     | 16005                      | 5697                 | 20473                     | 22623                      | 8052                 | 31744                     | 35101                      | 12494                | 40056                     | 44465                      | 15827                | 48289                     | 53332                      | 18983                | 70988                     | 78465                      | 27929                | 122893                    | 136378                     | 48543                | 176957                    | 197700                     | 70370                |
| 230          | 14619                     | 16341                      | 5817                 | 20901                     | 23098                      | 8221                 | 32407                     | 35837                      | 12756                | 40893                     | 45398                      | 16159                | 49298                     | 54450                      | 19381                | 72471                     | 80110                      | 28515                | 125461                    | 139238                     | 49561                | 180655                    | 201847                     | 71846                |
| 240          | 15218                     | 17013                      | 6056                 | 21756                     | 24047                      | 8559                 | 33734                     | 37310                      | 13280                | 42567                     | 47263                      | 16823                | 51317                     | 56688                      | 20178                | 75438                     | 83402                      | 29686                | 130597                    | 144960                     | 51597                | 188050                    | 210141                     | 74798                |
| 250          | 15816                     | 17684                      | 6295                 | 22612                     | 24996                      | 8897                 | 35061                     | 38782                      | 13804                | 44241                     | 49128                      | 17487                | 53335                     | 58925                      | 20974                | 78405                     | 86694                      | 30858                | 135733                    | 150681                     | 53634                | 195446                    | 218435                     | 77750                |

## DIMENSIONS—WEIGHTS (approximate) • TYPE 301

| Inlet <sup>1</sup> | Orifice | Outlet <sup>2</sup> | A   | B  | C   | Shipping Weight |
|--------------------|---------|---------------------|-----|----|-----|-----------------|
| 1½" F.P.T.         | J       | 2½" F.P.T.          | 18½ | 3½ | 4¼  | 28              |
| 1½" FLG.           | J       | 2½" F.P.T.          | 18½ | 3½ | 4¼  | 30              |
| 2" FLG.            | J       | 2½" F.P.T.          | 18½ | 3½ | 4¼  | 33              |
| 2½" FLG.           | J       | 2½" F.P.T.          | 18½ | 3½ | 4¼  | 36              |
| 2" F.P.T.          | K       | 3" F.P.T.           | 19½ | 4  | 4½  | 46              |
| 2" FLG.            | K       | 3" F.P.T.           | 19½ | 4  | 4½  | 51              |
| 2½" FLG.           | K       | 3" F.P.T.           | 19½ | 4  | 4½  | 54              |
| 3" FLG.            | K       | 3" F.P.T.           | 19½ | 4  | 4½  | 58              |
| 2½" F.P.T.         | L       | 4" F.P.T.           | 22  | 4½ | 5½  | 70              |
| 2½" FLG.           | L       | 4" F.P.T.           | 22  | 4½ | 5½  | 76              |
| 3" FLG.            | L       | 4" F.P.T.           | 22  | 4½ | 5½  | 79              |
| 4" FLG.            | L       | 4" F.P.T.           | 22  | 4½ | 5½  | 81              |
| 3" F.P.T.          | M       | 4" F.P.T.           | 22½ | 5½ | 5½  | 90              |
| 3" FLG.            | M       | 4" F.P.T.           | 22½ | 5½ | 5½  | 96              |
| 4" FLG.            | M       | 4" F.P.T.           | 22½ | 5½ | 5½  | 100             |
| 4" FLG.            | N       | 6" FLG.             | 23  | 7½ | 6½  | 150             |
| 4" FLG.            | P       | 6" FLG.             | 26¼ | 7½ | 6½  | 176             |
| 6" FLG.            | Q       | 8" FLG.             | 36½ | 9½ | 9½  | 325             |
| 6" FLG.            | R       | 8" FLG.             | 42½ | 10 | 10½ | 375             |

<sup>1</sup>Inlet Flanges are ANSI B16.1-250#.

<sup>2</sup>Outlet Flanges are ANSI B16.1-125#.

For Cast Steel dimensional data, consult factory.