



General representation



Waterworks

## Series 65 Basic Valve

### Description

OCV Series 65 control valves are automatic, hydraulically-actuated, diaphragm-operated, rigid seal globe and angle pattern valves. The valves are dependable and hard working; with a simplicity of design that ensures minimal part wear for exceptional performance and longevity. Self-contained, the valves operate automatically off line pressure. When equipped with a variety of pilots, accessories, and materials, the valves perform a wide range of automatic fluid control specifically applicable to municipal water systems, wastewater, irrigation, and industrial systems. The valves consist of three major components: the body, the bonnet, and the internal diaphragm assembly.

### Certification & Compliance

UL Water Quality / NSF 61-G & 372

NSF-ISO Quality System (9001)

American-Made: American Recovery & Reinvestment

Factory Mutual Approved

ABS Type Approval

CE (Conformité Européenne) Compliance



### Features & Benefits

- Factory tested & certified
- Operates automatically off line pressure
- Quick opening; Non-slam closing operation (when equipped with regulation device)
- Rectangular-shaped, soft seat seal provides drip-tight Class VI closure
- Ductile iron & steel valves are internally & externally epoxy-coated for maximum corrosion protection
- Simple & reliable construction
- Easily maintained without removal from the line
- High-grade construction materials
- Throttling seat retainer for reliable flow & pressure stability
- Optional electric, pneumatic & electro-pneumatic control trims

### Operation

#### Valve Closed:

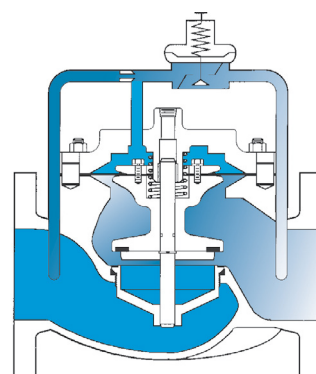
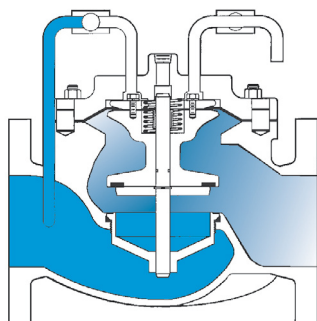
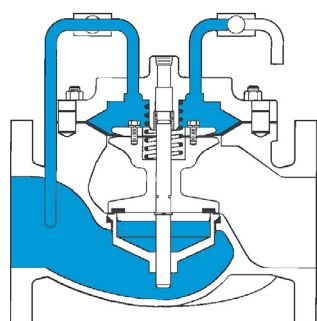
When line pressure from the valve inlet is applied to the cover chamber, pressurizing the diaphragm, the valve is closed drip-tight.

#### Valve Open:

When cover chamber pressure is vented, the valve shifts to the fully open position.

#### Valve Modulating:

The valve is between fully open and closed positions. The valve's control pilot modulates the pressure in the cover chamber, positioning the valve to control the desired pressure or flow. OCV pilot systems provide accurate control in a wide range of performance requirements.



### Flow Characteristics

$$DP = sg (Q/C_v \text{ or } K_v)^2$$

where: Q = Flow rate in USGPM (Standard) or Q = Flow rate in cubic meters/sec (Metric)

C<sub>v</sub> = Flow rate in USGPM @ 1 psi pressure drop (Standard) or

K<sub>v</sub> = Flow rate in cubic meters/sec @ 1 bar pressure drop (Metric)

DP = Pressure drop in psi (Standard) or DP = Pressure drop in bar (Metric)

sg = Specific gravity of line fluid

| Standard   |                      |                      |
|------------|----------------------|----------------------|
| Valve Size | Globe C <sub>v</sub> | Angle C <sub>v</sub> |
| 1 1/4"     | 23                   | 30                   |
| 1 1/2"     | 27                   | 35                   |
| 2"         | 47                   | 65                   |
| 2 1/2"     | 68                   | 87                   |
| 3"         | 120                  | 160                  |
| 4"         | 200                  | 270                  |
| 6"         | 450                  | 550                  |
| 8"         | 760                  | 1000                 |
| 10"        | 1250                 | 1600                 |
| 12"        | 1940                 | 2400                 |
| 14"        | 2200                 | --                   |
| 16"        | 2850                 | 4000                 |
| 24"        | 6900                 | --                   |

| Metric     |                      |                      |
|------------|----------------------|----------------------|
| Valve Size | Globe K <sub>v</sub> | Angle K <sub>v</sub> |
| DN35       | 20                   | 26                   |
| DN40       | 23                   | 30                   |
| DN50       | 40 1/2               | 56                   |
| DN65       | 59                   | 75                   |
| DN80       | 104                  | 138 1/2              |
| DN100      | 173                  | 233 1/2              |
| DN150      | 389                  | 476                  |
| DN200      | 657 1/2              | 865                  |
| DN250      | 299                  | 1384                 |
| DN300      | 1081                 | 2076                 |
| DN350      | 1903                 | --                   |
| DN400      | 2465                 | 3460                 |
| DN600      | 5968 1/2             | --                   |

Resetting, maintenance and periodic testing instructions must be followed as described in detail in the applicable OCV IOM (Installation, Operation & Maintenance) Manual.

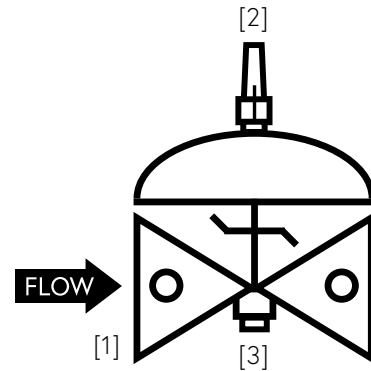
## Components & Typical Materials

The OCV S65 consists of the following components, arranged as shown on the schematic diagram.

[1] OCV S65 Basic Control Valve:  
Hydraulically-operated, diaphragm-actuated globe valve which closes with an elastomer-on-metal seal.

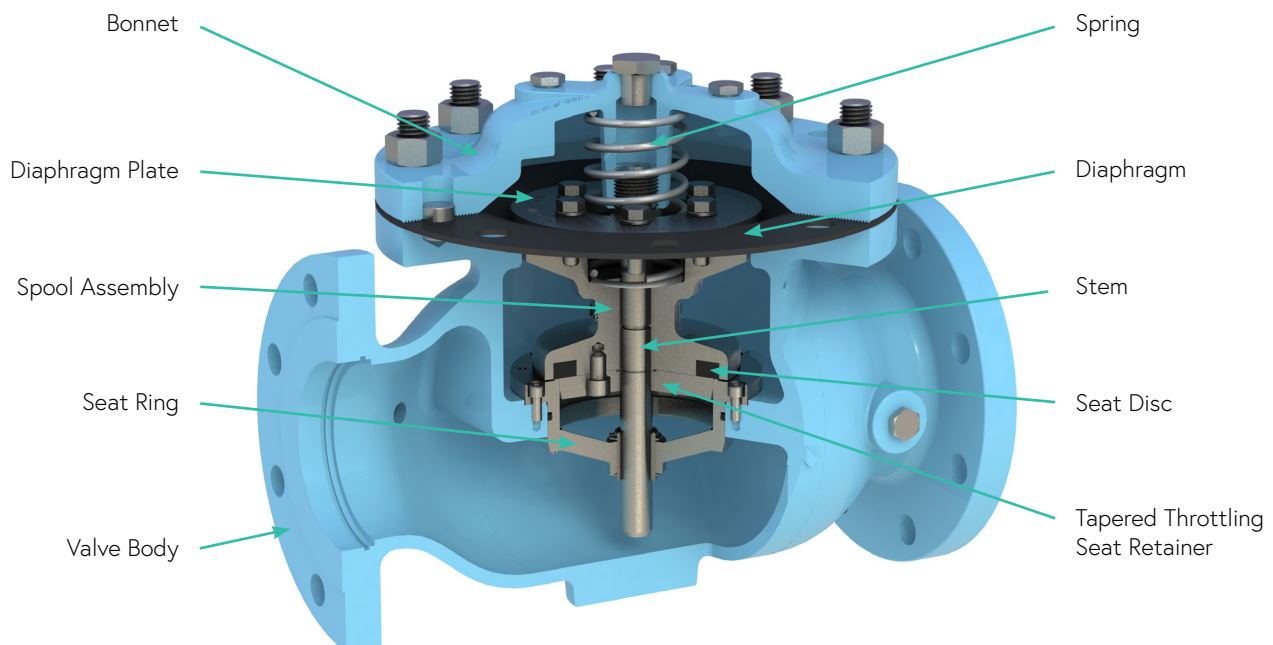
[2] OCV 155L Visual Indicator Assembly (optional):  
Provides indication of valve position at a glance.

[3] Drain Port (optional): Water supply drain (3" valve = 1¼" NPTF; 4"-12" valve = 2" NPTF)



| Part                          | Standard Material                                   | Optional                              |
|-------------------------------|-----------------------------------------------------|---------------------------------------|
| Valve Body/Bonnet             | Ductile Iron                                        | Cast Steel, Stainless Steel, Aluminum |
| Seat Ring                     | Stainless Steel                                     | Stainless Steel                       |
| Seat Retainer/Diaphragm Plate | Stainless Steel (up to 8"); Ductile Iron (10" & up) | --                                    |
| Stem                          | Stainless Steel                                     | Monel                                 |
| Spring                        | Stainless Steel                                     | --                                    |
| Diaphragm                     | EPDM                                                | Buna-N                                |
| Seat Disc                     | EPDM                                                | Buna-N                                |
| Pilot                         | Stainless Steel                                     | Stainless Steel                       |
| Tubing & Fittings             | Stainless Steel                                     | Stainless Steel                       |

\*Consult Factory for additional available materials.



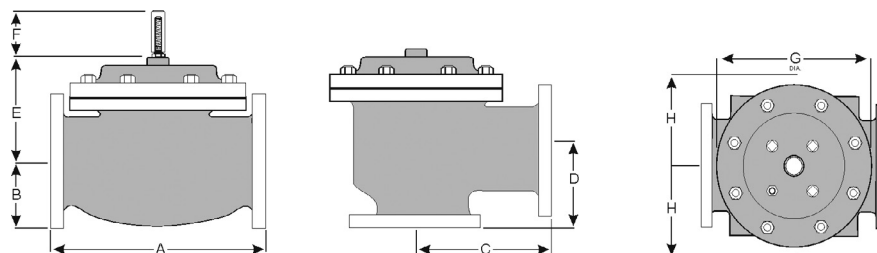
### General Arrangement & Dimensions

| Standard Sizes |                 |                |         |         |        |         |        |          |         |        |        |          |        |
|----------------|-----------------|----------------|---------|---------|--------|---------|--------|----------|---------|--------|--------|----------|--------|
| DIM            | End Connections | 1 1/2"         | 2"      | 2 1/2"  | 3"     | 4"      | 6"     | 8"       | 10"     | 12"    | 14"    | 16"      | 24"    |
| A              | Threaded        | 8 3/4          | 9 7/8   | 10 1/2  | 13     | --      | --     | --       | --      | --     | --     | --       | --     |
|                | Grooved         | 8 3/4          | 9 7/8   | 10 1/2  | 13     | 15 1/4  | 20     | --       | --      | --     | --     | --       | --     |
|                | 150# Flanged    | 8 1/2          | 9 3/8   | 10 1/2  | 12     | 15      | 17 3/4 | 25 3/8   | 29 3/4  | 34     | 39     | 40 3/8   | 62     |
|                | 300# Flanged    | 8 3/4          | 9 7/8   | 11 1/8  | 12 3/4 | 15 5/8  | 18 5/8 | 26 3/8   | 31 1/8  | 35 1/2 | 40 1/2 | 42       | 62 3/4 |
| B              | Threaded        | 1 7/16         | 1 11/16 | 1 7/8   | 2 1/4  | --      | --     | --       | --      | --     | --     | --       | --     |
|                | Grooved         | 1*             | 1 3/16  | 1 7/16  | 1 3/4  | 2 1/4   | --     | --       | --      | --     | --     | --       | --     |
|                | 150# Flanged    | 2 5/16 - 2 1/2 | 3       | 3 1/2   | 3 3/4  | 4 1/2   | 5 1/2  | 6 3/4    | 8       | 9 1/2  | 10 5/8 | 11 3/4   | 16     |
|                | 300# Flanged    | 2 5/8 - 3 1/16 | 3 1/4   | 3 3/4   | 4 1/8  | 5       | 6 1/4  | 7 1/2    | 8 3/4   | 10 1/4 | 11 1/2 | 12 3/4   | 18     |
| C              | Threaded        | 4 3/8          | 4 3/4   | 6       | 6 1/2  | --      | --     | --       | --      | --     | --     | --       | --     |
|                | Grooved         | 4 3/8*         | 4 3/4   | 6       | 6 1/2  | 7 5/8   | --     | --       | --      | --     | --     | --       | --     |
|                | 150# Flanged    | 4 1/4          | 4 3/4   | 6       | 6      | 7 1/2   | 10     | 12 11/16 | 14 7/8  | 17     | --     | 20 13/16 | --     |
|                | 300# Flanged    | 4 3/8          | 5       | 6 3/8   | 6 3/8  | 7 3/16  | 10 1/2 | 13 3/16  | 15 9/16 | 17 3/4 | --     | 21 5/8   | --     |
| D              | Threaded        | 3 1/8          | 3 7/8   | 4       | 4 1/2  | --      | --     | --       | --      | --     | --     | --       | --     |
|                | Grooved         | 3 1/8*         | 3 7/8   | 4       | 4 1/2  | 5 5/8   | --     | --       | --      | --     | --     | --       | --     |
|                | 150# Flanged    | 3              | 3 7/8   | 4       | 4      | 5 1/2   | 6      | 8        | 11 3/8  | 11     | --     | 15 11/16 | --     |
|                | 300# Flanged    | 3 1/8          | 4 1/8   | 4 3/8   | 4 3/8  | 5 13/16 | 6 1/2  | 8 1/2    | 12 1/16 | 11 3/4 | --     | 16 1/2   | --     |
| E              | All             | 6              | 6       | 7       | 6 1/2  | 8       | 10     | 11 7/8   | 15 3/8  | 17     | 18     | 19       | 27     |
| F              | All             | 3 7/8          | 3 7/8   | 3 7/8   | 3 7/8  | 3 7/8   | 3 7/8  | 6 3/8    | 6 3/8   | 6 3/8  | 6 3/8  | 6 3/8    | 8      |
| G              | All             | 6              | 6 3/4   | 7 11/16 | 8 3/4  | 11 3/4  | 14     | 21       | 24 1/2  | 28     | 31 1/4 | 34 1/2   | 52     |
| H              | All             | 10             | 11      | 11      | 11     | 12      | 13     | 14       | 17      | 18     | 20     | 20       | 28 1/2 |

Approximate Dimensions. \*Grooved end not available in 1 1/4"

| Metric Sizes |                 |       |      |      |      |       |       |       |       |       |       |       |       |
|--------------|-----------------|-------|------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|
| DIM          | End Connections | DN40  | DN50 | DN65 | DN80 | DN100 | DN150 | DN200 | DN250 | DN300 | DN350 | DN400 | DN600 |
| A            | Threaded        | 222   | 251  | 267  | 330  | --    | --    | --    | --    | --    | --    | --    | --    |
|              | Grooved         | 222   | 251  | 267  | 330  | 387   | 508   | --    | --    | --    | --    | --    | --    |
|              | 150# Flanged    | 216   | 238  | 267  | 305  | 381   | 451   | 645   | 756   | 864   | 991   | 1026  | 1575  |
|              | 300# Flanged    | 222   | 251  | 283  | 324  | 397   | 437   | 670   | 791   | 902   | 1029  | 1067  | 1619  |
| B            | Threaded        | 37    | 43   | 48   | 57   | --    | --    | --    | --    | --    | --    | --    | --    |
|              | Grooved         | 25*   | 30   | 37   | 44   | 57    | --    | --    | --    | --    | --    | --    | --    |
|              | 150# Flanged    | 59-64 | 76   | 89   | 95   | 114   | 140   | 171   | 203   | 241   | 270   | 298   | 406   |
|              | 300# Flanged    | 67-78 | 83   | 95   | 105  | 127   | 159   | 191   | 222   | 260   | 292   | 324   | 457   |
| C            | Threaded        | 111   | 121  | 152  | 165  | --    | --    | --    | --    | --    | --    | --    | --    |
|              | Grooved         | 111*  | 121  | 152  | 165  | 194   | --    | --    | --    | --    | --    | --    | --    |
|              | 150# Flanged    | 108   | 121  | 152  | 152  | 191   | 254   | 322   | 378   | 432   | --    | 529   | --    |
|              | 300# Flanged    | 111   | 127  | 162  | 162  | 198   | 267   | 335   | 395   | 451   | --    | 549   | --    |
| D            | Threaded        | 79    | 98   | 114  | 114  | --    | --    | --    | --    | --    | --    | --    | --    |
|              | Grooved         | 79*   | 98   | 114  | 114  | 143   | --    | --    | --    | --    | --    | --    | --    |
|              | 150# Flanged    | 76    | 98   | 102  | 102  | 140   | 152   | 203   | 289   | 279   | --    | 398   | --    |
|              | 300# Flanged    | 79    | 105  | 111  | 111  | 148   | 165   | 216   | 306   | 298   | --    | 419   | --    |
| E            | All             | 152   | 152  | 178  | 165  | 203   | 254   | 302   | 391   | 432   | 457   | 483   | 686   |
| F            | All             | 98    | 98   | 98   | 98   | 98    | 98    | 162   | 162   | 162   | 162   | 162   | 203   |
| G            | All             | 152   | 171  | 222  | 222  | 298   | 356   | 533   | 711   | 794   | 794   | 876   | 1321  |
| H            | All             | 254   | 279  | 279  | 279  | 305   | 330   | 356   | 457   | 508   | 508   | 508   | 724   |

Approximate Dimensions. \*Grooved end not available in 1/4"



## Specifications

|                                                |                                                                                     |                                  |                                      |        |                 |        |
|------------------------------------------------|-------------------------------------------------------------------------------------|----------------------------------|--------------------------------------|--------|-----------------|--------|
| VALVE BODY & BONNET                            | Ductile Iron                                                                        |                                  | Cast Steel                           |        | Stainless Steel |        |
| Material Specification                         | ASTM A536/65-45-12                                                                  |                                  | ASTM A216/WCB                        |        | ALL GRADES      |        |
| END CONNECTIONS                                |                                                                                     |                                  |                                      |        |                 |        |
| Flange Standard (also available in metric)     | ANSI B16.42                                                                         |                                  | ANSI B16.5                           |        | ANSI B16.5      |        |
| Flange Class                                   | 150#                                                                                | 300#                             | 150#                                 | 300#   | 150#            | 300#   |
| Flange Face                                    | Flat                                                                                | Raised                           | Raised                               | Raised | Raised          | Raised |
| Maximum Working Pressure                       | 250psi                                                                              | 640psi                           | 285psi                               | 740psi | 285psi          | 740psi |
| Threaded Working Pressure: ANSI B1.20.1 640psi |                                                                                     |                                  | Grooved End Working Pressure: 300psi |        |                 |        |
| INTERNALS                                      |                                                                                     |                                  |                                      |        |                 |        |
| Stem                                           | Stainless Steel                                                                     |                                  |                                      |        |                 |        |
| Spring                                         | Stainless Steel                                                                     |                                  |                                      |        |                 |        |
| Spool                                          | Ductile Iron (epoxy coated) / Optional - Stainless Steel                            |                                  |                                      |        | Stainless Steel |        |
| Seat Disc Retainer                             | Ductile Iron (epoxy coated) (10" & Larger)                                          |                                  |                                      |        | Stainless Steel |        |
|                                                | Stainless Steel (8" & Smaller / Optional - All Sizes)                               |                                  |                                      |        |                 |        |
| Diaphragm Plate                                | Ductile Iron (epoxy coated) / Optional - Stainless Steel                            |                                  |                                      |        | Stainless Steel |        |
| Seat Ring Trim                                 | Stainless Steel / Optional - Low-Lead Bronze                                        |                                  |                                      |        | Stainless Steel |        |
| Upper Stem Bushing                             | Bronze or PTFE                                                                      |                                  |                                      |        | PTFE            |        |
| Lower Stem Bushing                             | Not applicable for Low-Lead Bronze Seat Rings / PTFE for Stainless Steel Seat Rings |                                  |                                      |        |                 |        |
| ELASTOMER PARTS (Rubber)                       |                                                                                     |                                  |                                      |        |                 |        |
| Diaphragm/Seat Disc/O-Rings                    | EPDM / Optional Buna-N                                                              |                                  |                                      |        |                 |        |
| Operating Temperature*                         | 32°F to 230°F Max                                                                   |                                  |                                      |        |                 |        |
| COATINGS                                       | NSF-61 Epoxy Coating                                                                |                                  |                                      |        |                 |        |
| ELECTRICAL SOLENOIDS                           |                                                                                     |                                  |                                      |        |                 |        |
| Body                                           | Brass / Stainless Steel                                                             |                                  |                                      |        |                 |        |
| Enclosures                                     | Water Tight, NEMA 1, 3 , 4, 4X                                                      |                                  |                                      |        |                 |        |
| Power                                          | AC, 60HZ - 120, 240, 480 Volts                                                      | AC, 50HZ - In 110 Volt Multiples | DC, 6, 12, 24, 240 Volts             |        |                 |        |
| Operation                                      | Energize to Open                                                                    |                                  | De-Energize to Open                  |        |                 |        |
| CONTROL PILOTS                                 |                                                                                     |                                  |                                      |        |                 |        |
| Body                                           | Low-Lead Bronze / Stainless Steel                                                   |                                  |                                      |        |                 |        |
| Internal                                       | Stainless Steel                                                                     |                                  |                                      |        |                 |        |
| TUBING                                         | Stainless Steel / Copper                                                            |                                  |                                      |        |                 |        |
| FITTINGS                                       | Low-Lead Brass / Stainless Steel                                                    |                                  |                                      |        |                 |        |

\*Consult Factory when temperatures approach low or high temperature allowance. Consult Factory for additional available materials.



Globe Flanged Sizes

|        |        |      |        |      |       |       |       |       |       |       |       |        |        |       |
|--------|--------|------|--------|------|-------|-------|-------|-------|-------|-------|-------|--------|--------|-------|
| 1 1/4" | 1 1/2" | 2"   | 2 1/2" | 3"   | 4"    | 6"    | 8"    | 10"   | 12"   | 14"   | 16"   | 18"    | 20"    | 24"   |
| 32mm   | 40mm   | 50mm | 65mm   | 80mm | 100mm | 150mm | 200mm | 250mm | 300mm | 350mm | 400mm | 450mm* | 500mm* | 600mm |

\* Consult factory



Angle Flanged Sizes

|        |        |      |        |      |       |       |       |       |       |       |
|--------|--------|------|--------|------|-------|-------|-------|-------|-------|-------|
| 1 1/4" | 1 1/2" | 2"   | 2 1/2" | 3"   | 4"    | 6"    | 8"    | 10"   | 12"   | 16"   |
| 32mm   | 40mm   | 50mm | 65mm   | 80mm | 100mm | 150mm | 200mm | 250mm | 300mm | 400mm |



Globe/Threaded Sizes

|        |        |      |        |      |
|--------|--------|------|--------|------|
| 1 1/4" | 1 1/2" | 2"   | 2 1/2" | 3"   |
| 32mm   | 40mm   | 50mm | 65mm   | 80mm |



Globe/Angle Grooved Sizes

|        |        |      |        |      |       |        |
|--------|--------|------|--------|------|-------|--------|
| 1 1/4" | 1 1/2" | 2"   | 2 1/2" | 3"   | 4"    | 6"     |
| 32mm   | 40mm   | 50mm | 65mm   | 80mm | 100mm | 150mm* |

## Technical Data

| Temperature (Elastomers)                            |                                            |
|-----------------------------------------------------|--------------------------------------------|
| Water                                               | up to 110°C / 230°F max                    |
| Sizes                                               |                                            |
| Globe                                               | 1 1/4" - 24" / 32-600mm                    |
| Angle                                               | 1 1/4" - 16" / 32-400mm                    |
| Pressure Rating (Ductile Iron at 100°F/37.8°C)      |                                            |
| 250 psi for ISO Class 150# & 640 psi for Class 300# |                                            |
| End Connections                                     |                                            |
| Flanged                                             | ISO-PN16 & ISO-PN25                        |
|                                                     | ASME/ANSI B16.42 & B16.5 Class 150# & 300# |
|                                                     | Additional options available upon request  |
| Threaded                                            | BSP/NPT                                    |
| Grooved                                             | ASME/ANSI AWWA 606                         |
| Elastomers                                          |                                            |
| EPDM                                                | Buna-N                                     |
| Coating Material                                    |                                            |
| NSF 61 Epoxy Coating                                | High Built, Fusion Bonded Apoxy            |
| Main Valve Trim Material                            |                                            |
| Stainless Steel                                     |                                            |

| Body & Cover Material                                                                                                |                           |
|----------------------------------------------------------------------------------------------------------------------|---------------------------|
| Ductile Iron ASTM A536                                                                                               | Stainless Steel ASTM CF8M |
| Cast Steel ASTM A216                                                                                                 | Aluminum                  |
| Trim Material                                                                                                        |                           |
| Stainless Steel                                                                                                      |                           |
| Optional Components                                                                                                  |                           |
| Pressure Switch                                                                                                      | Open/Close Speed Control  |
| Limit Switch                                                                                                         | Pressure Gauges           |
| Drain Plug                                                                                                           | Visual Position Indicator |
| Isolation Ball Valves                                                                                                |                           |
| Items to Specify                                                                                                     |                           |
| Electrical features other than standard (24VDC, IP65/NEMA4)                                                          |                           |
| If explosion proof accessories are required such as solenoids, pressure switches, etc., please define classification |                           |
| Control trim material other than standard                                                                            |                           |
| Required standards, certifications and approvals                                                                     |                           |