



# **NS SERIES Ball & Butterfly Valves**

**NSF/ANSI 61 & 372 Certified**



UND. LAB. INC. CLFD  
ANSI/NSF 61 also certified to ANSI/NSF 372  
<5DZ0>





VALVE  
NSF/ANSI 61  
ALSO CERTIFIED TO  
NSF/ANSI 372  
<5DZ0>

### Applications

- Water Treatment
- Potable Water Service
- Reverse Osmosis
- Desalination

**A-T Controls' NS Series floating ball valves and NS series butterfly valves** are certified to meet the requirements of NSF 61 (Drinking Water System Components- Health Affects) and NSF 372 (Drinking Water System Components- Lead Content). This means that NS Series valves are certified for use (by Underwriters Laboratory) in water treatment, water purification, potable water, and water distribution systems and conforms with North American lead content requirements for "lead-free" plumbing.

The NS Series valves include a tag showing that the valve assembly is certified to NSF 61 and NSF 372.

NS butterfly valves are available in sizes 2" – 24", and have Class 150 flanges. NS Series ball valves are available with threaded, socket weld, butt weld, Class 150, and Class 300 end connections.

## NS Series Valves

Certified NSF 61 & 372 Valve Offering:

|   |           |   |
|---|-----------|---|
| <b>NS20</b>                                 | 1/4" - 3" | 2 pc. Regular Port Ball Valve, Threaded Ends, 1000 PSI, Stainless Steel                               |
| <b>NS22</b>                                 | 1/4" - 3" | 2 pc. Full Port Ball Valve, Direct Mount, Threaded Ends, 1000 PSI, Stainless Steel                    |
| <b>NS55</b>                                 | 1/4" - 4" | 3 pc. Full Port Ball Valve, Threaded, Socket Weld or Butt Weld, 600-1000 PSI, Stainless Steel         |
| <b>NS90-F1</b>                              | 1/2" - 4" | 2 pc. Flanged Ball Valve, ASME Class 150, Stainless Steel   |
| <b>NSD9-F1</b>                              | 6"        | 2 pc. Direct Mount, Flanged Ball Valve, ASME Class 150, Stainless Steel                               |
| <b>NSD9-F3</b>                              | 1/2" - 6" | 2 pc. Direct Mount, Flanged Ball Valve, ASME Class 300, Stainless Steel                               |
| <b>NSV9</b>                                 | 1/2" - 6" | 2pc. Flanged Ball Valve, ASME Class 150 or 300, Stainless Steel, with V-Port Ball                     |
| <b>NS Series Resilient Seated Butterfly</b> | 2" - 24"  | NSF 61 & 372 and Dead-End Service, Wafer or Lug, ASME Class 150, Stainless Steel or Ductile Iron body |

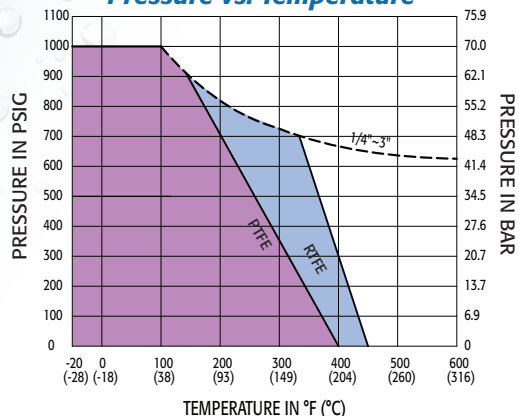


# 2-PC FULL PORT | THREADED Series NS20



- Two piece design
- Available in stainless steel
- Full port 1000 psi
- Threaded ends only

Pressure vs. Temperature



NOTE: Dotted line shows the rating for valve body. Solid line shows the rating for valve seat. Both ratings need to be considered when determining the limitation of the valve for specific application.

SAMPLE PART #  
**NS20-TH-0200-XXX**

Valve Series  
End Connection

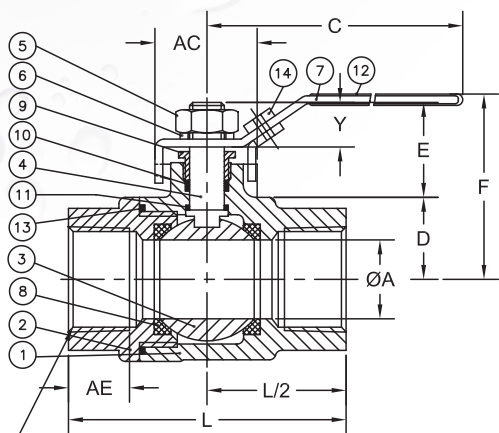
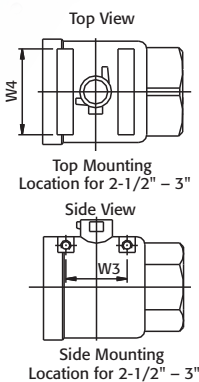
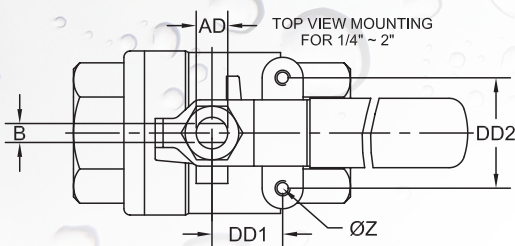
Valve Size  
Seat Material

Additional Special  
Designation

Special Designation



CLASSIFIED  
**UL**  
WATER QUALITY  
VALVE  
NSF/ANSI 61  
AND ALSO CERTIFIED TO  
NSF/ANSI 372  
<5DZ0>



STANDARD  
NPT THREADS

## MATERIALS LIST

| NO. | PART NAME      | QTY | MATERIAL                          |
|-----|----------------|-----|-----------------------------------|
| 1   | BODY           | 1   | ASTM A351 GRADE CF8M              |
| 2   | END CAP        | 1   | ASTM A351 GRADE CF8M              |
| 3   | BALL           | 1   | 1/4" THRU 3/8"<br>ASTM A276 SS316 |
| 3   | BALL           | 1   | 1/2" THRU 3"<br>ASTM A351 GR CF8M |
| 4   | STEM           | 1   | ASTM A276 SS316                   |
| 5   | STEM NUT       | 1   | AISI 304                          |
| 6   | LOCKWASHER     | 1   | AISI 304                          |
| 7   | HANDLE         | 1   | AISI 304                          |
| 8   | SEAT           | 2   | RTFE                              |
| 9   | GLAND NUT      | 1   | AISI 304                          |
| 10  | V-RING PACKING | *   | PTFE                              |
| 11  | THRUST WASHER  | 1   | PTFE                              |
| 12  | HANDLE SLEEVE  | 1   | VINYL                             |
| 13  | JOINT GASKET   | 1   | PTFE                              |
| 14  | LOCK SADDLE    | 1   | AISI 304                          |

\*Regular 1 pc stem packing is used for 1/4" and 3/8"; 1 set of V-Ring packing consists of 2 pcs. of V-Ring for 1/2" -3" models

## DIMENSIONS (IN)

| SIZE   | A    | B     | C    | D    | E    | F    | L    | Y    | Z       | AC   | AD   | AE   | DD1   | DD2   | W3    | W4    | LBS.  |
|--------|------|-------|------|------|------|------|------|------|---------|------|------|------|-------|-------|-------|-------|-------|
| 1/4"   | 0.45 | 0.197 | 3.94 | 0.59 | 0.88 | 1.97 | 2.17 | 0.39 | 10-24   | 1.03 | 0.31 | 0.59 | 0.500 | 1.122 | N/A   | N/A   | 0.51  |
| 3/8"   | 0.49 | 0.197 | 3.94 | 0.60 | 0.88 | 1.97 | 2.17 | 0.39 | 10-24   | 1.02 | 0.31 | 0.59 | 0.500 | 1.122 | N/A   | N/A   | 0.51  |
| 1/2"   | 0.59 | 0.256 | 5.12 | 0.71 | 1.01 | 2.36 | 2.56 | 0.43 | 10-24   | 1.18 | 0.37 | 0.63 | 0.500 | 1.122 | N/A   | N/A   | 0.84  |
| 3/4"   | 0.79 | 0.256 | 5.12 | 0.81 | 1.01 | 2.52 | 2.94 | 0.43 | 10-24   | 1.18 | 0.37 | 0.67 | 0.882 | 1.378 | N/A   | N/A   | 1.15  |
| 1"     | 0.98 | 0.315 | 6.50 | 0.99 | 1.24 | 2.80 | 3.46 | 0.53 | 1/4"-20 | 1.38 | 0.43 | 0.80 | 0.882 | 1.378 | N/A   | N/A   | 2.03  |
| 1-1/4" | 1.26 | 0.315 | 6.50 | 1.20 | 1.24 | 3.07 | 4.02 | 0.53 | 1/4"-20 | 1.38 | 0.43 | 0.87 | 1.000 | 1.500 | N/A   | N/A   | 2.91  |
| 1-1/2" | 1.50 | 0.382 | 7.48 | 1.58 | 1.38 | 3.39 | 4.33 | 0.61 | 1/4"-20 | 1.64 | 0.55 | 0.89 | 1.000 | 1.500 | N/A   | N/A   | 4.19  |
| 2"     | 1.97 | 0.382 | 7.48 | 1.83 | 1.20 | 3.74 | 4.92 | 0.61 | 1/4"-20 | 1.58 | 0.55 | 1.02 | 1.000 | 1.500 | N/A   | N/A   | 6.88  |
| 2-1/2" | 2.56 | 0.472 | 9.84 | 2.41 | 2.13 | 5.12 | 6.32 | 0.96 | 1/4"-20 | 2.09 | 0.75 | 1.22 | N/A   | N/A   | 2.323 | 2.402 | 14.33 |
| 3"     | 3.15 | 0.472 | 9.84 | 2.92 | 2.17 | 5.83 | 7.01 | 0.96 | 1/4"-20 | 2.09 | 0.75 | 1.34 | N/A   | N/A   | 2.756 | 2.795 | 20.50 |

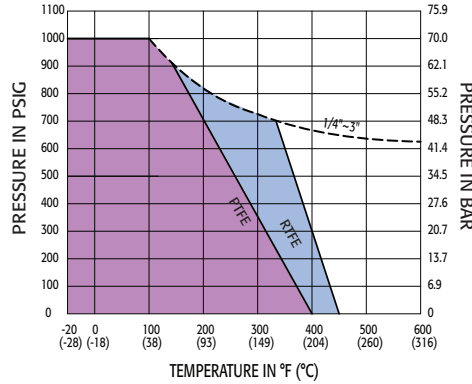
# Series NS22 DIRECT MOUNT | 2-PC FULL PORT | THREADED



SAMPLE PART #  
**NS22-TH-0200-XXX**

Valve Series | End Connection | Additional Special Designation  
Valve Size | Seat Material | Special Designation

## Pressure vs. Temperature



NOTE: Dotted line shows the rating for valve body. Solid line shows the rating for valve seat. Both ratings need to be considered when determining the limitation of the valve for specific application. Consult factory for other seat materials.

| SIZE   | Cv  |
|--------|-----|
| 1/4"   | 7   |
| 3/8"   | 8   |
| 1/2"   | 15  |
| 3/4"   | 40  |
| 1"     | 70  |
| 1-1/4" | 110 |
| 1-1/2" | 250 |
| 2"     | 350 |
| 2-1/2" | 600 |
| 3"     | 900 |

## Break Away Torque for RTFE Seats

| SIZE   | IN.-LBS. |
|--------|----------|
| 1/4"   | 62       |
| 3/8"   | 62       |
| 1/2"   | 62       |
| 3/4"   | 71       |
| 1"     | 124      |
| 1-1/4" | 159      |
| 1-1/2" | 230      |
| 2"     | 319      |
| 2-1/2" | 487      |
| 3"     | 770      |

NOTE: For other seat material, consult factory

## MATERIALS LIST

| NO. | PART NAME          | QTY. | MATERIAL                          | Repair Kit |
|-----|--------------------|------|-----------------------------------|------------|
| 1   | BODY               | 1    | ASTM A351 GRADE CF8M              |            |
| 2   | END CAP            | 1    | ASTM A351 GRADE CF8M              |            |
| 3   | BALL               | 1    | 1/4" THRU 3/8" ASTM A276 SS316    |            |
| 3   | BALL               | 1    | 1/2" THRU 3" ASTM A351 GRADE CF8M |            |
| 4   | SEAT               | 2    | RTFE or PTFE                      | ✓          |
| 5   | JOINT GASKET       | 1    | PTFE                              | ✓          |
| 6   | STEM SEAL          | 1    | RTFE                              | ✓          |
| 7   | STEM               | 1    | ASTM A276 SS316                   |            |
| 8   | GLAND PACKING      | *    | PTFE                              | ✓          |
| 9   | GLAND BUSHING      | 1    | AISI 304                          |            |
| 10  | LOCK SADDLE        | 1    | AISI 304                          |            |
| 11  | STEM NUT           | 2    | AISI 304                          |            |
| 12  | HANDLE             | 1    | AISI 304                          |            |
| 13  | HANDLE SLEEVE      | 1    | VINYL                             |            |
| 14  | STEM WASHER        | 1    | AISI 304                          |            |
| 15  | BELLEVILLE WASHER  | 2    | AISI 301                          |            |
| 16  | STOP BOLT          | 1    | AISI 304                          |            |
| 17  | STOP BOLT NUT      | 1    | AISI 304                          |            |
| 18  | GLAND PACKING      | 1    | PTFE                              | ✓          |
| 19  | HANDLE LOCK        | 1    | AISI 304                          |            |
| 20  | HANDLE NUT         | 1    | AISI 304                          |            |
| 21  | ANTI-STATIC DEVICE | 2    | AISI 316                          |            |

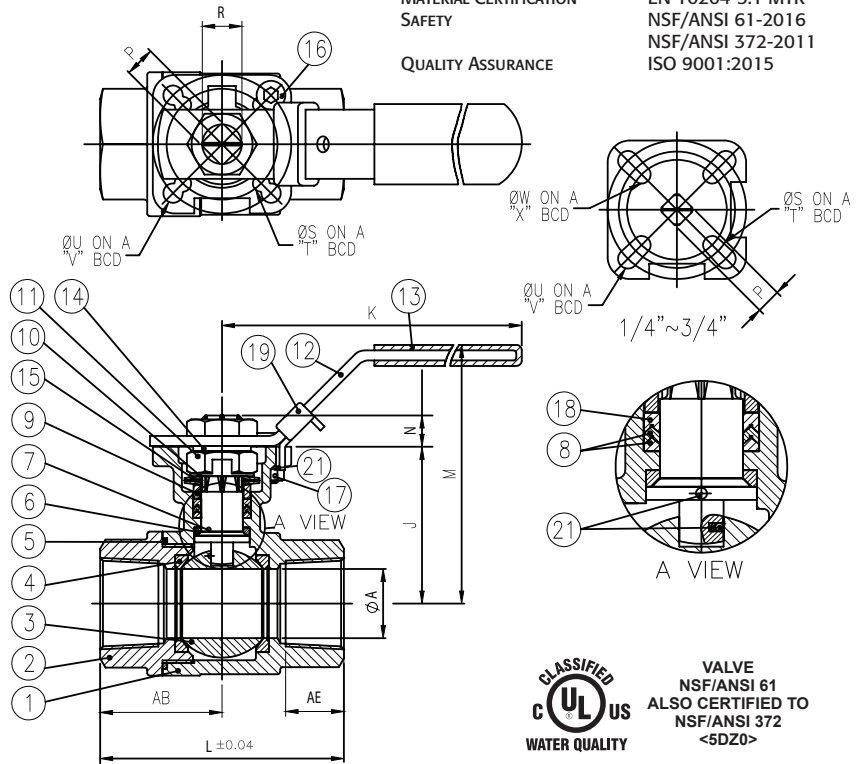
\* 1/4" - 1/2" - 1 PC  
3/4" - 2" - 2 PCS  
2-1/2" - 3" - 3 PCS

## STANDARDS

DESIGN  
END CONNECTIONS  
SULFIDE STRESS PROTECTION  
MOUNTING  
MARKING SYSTEM FOR VALVES  
SAFETY INTEGRITY  
MATERIAL CERTIFICATION  
SAFETY

ASME B16.34  
ASME B1.20.1  
NACE MRO175  
ISO 5211  
MSS SP-25, MSS SP-55  
IEC 61508:2010; SIL 3  
EN 10204-3.1 MTR  
NSF/ANSI 61-2016  
NSF/ANSI 372-2011  
ISO 9001:2015

## QUALITY ASSURANCE



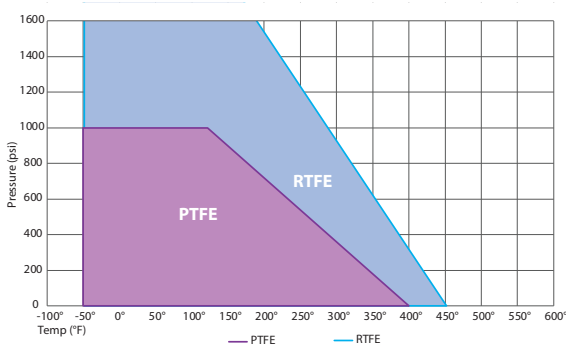
## DIMENSIONS (IN)

| Size   | Valve Dimensions |      |      |      |       |      |      | Actuator Mounting Dimensions |       |      |      |       |      |       | ISO 5211 | (LBS) |             |       |
|--------|------------------|------|------|------|-------|------|------|------------------------------|-------|------|------|-------|------|-------|----------|-------|-------------|-------|
|        | ØA               | AB   | AE   | J    | K     | L    | M    | N                            | P     | R    | S    | T     | U    | V     |          |       | W           | X     |
| 1/4"   | 0.45             | 1.28 | 0.55 | 1.52 | 5.91  | 2.56 | 3.03 | 0.25                         | 0.354 | 0.43 | 0.26 | 1.969 | 0.28 | 1.654 | 0.26     | 1.417 | F03/F04/F05 | 1.23  |
| 3/8"   | 0.49             | 1.28 | 0.55 | 1.52 | 5.91  | 2.56 | 3.03 | 0.25                         | 0.354 | 0.43 | 0.26 | 1.969 | 0.28 | 1.654 | 0.26     | 1.417 | F03/F04/F05 | 1.23  |
| 1/2"   | 0.59             | 1.28 | 0.53 | 1.52 | 6.30  | 2.56 | 3.03 | 0.25                         | 0.354 | 0.43 | 0.26 | 1.969 | 0.28 | 1.654 | 0.26     | 1.417 | F03/F04/F05 | 1.23  |
| 3/4"   | 0.79             | 1.47 | 0.61 | 1.81 | 6.30  | 2.94 | 3.35 | 0.27                         | 0.354 | 0.43 | 0.26 | 1.969 | 0.28 | 1.654 | 0.26     | 1.417 | F03/F04/F05 | 1.32  |
| 1"     | 0.98             | 1.73 | 0.72 | 2.23 | 6.50  | 3.46 | 3.78 | 0.42                         | 0.433 | 0.56 | 0.24 | 1.969 | 0.28 | 1.654 | 0.24     | N/A   | F04/F05     | 2.4   |
| 1-1/4" | 1.26             | 2.01 | 0.81 | 2.40 | 6.50  | 4.02 | 3.94 | 0.42                         | 0.433 | 0.56 | 0.24 | 1.969 | 0.28 | 1.654 | 0.24     | N/A   | F04/F05     | 3.31  |
| 1-1/2" | 1.50             | 2.17 | 0.76 | 3.05 | 8.46  | 4.33 | 5.00 | 0.54                         | 0.551 | 0.75 | 0.30 | 2.756 | 0.35 | 1.969 | 0.30     | N/A   | F05/F07     | 5.62  |
| 2"     | 1.97             | 2.46 | 0.89 | 3.35 | 8.46  | 4.92 | 5.28 | 0.54                         | 0.551 | 0.75 | 0.30 | 2.756 | 0.35 | 1.969 | 0.30     | N/A   | F05/F07     | 7.93  |
| 2-1/2" | 2.56             | 3.16 | 1.09 | 4.28 | 10.35 | 6.32 | 6.57 | 0.65                         | 0.669 | 0.88 | 0.39 | 4.016 | 0.47 | 2.756 | 0.39     | N/A   | F07/F10     | 16.38 |
| 3"     | 3.15             | 3.51 | 1.19 | 4.62 | 12.32 | 7.01 | 6.89 | 0.70                         | 0.669 | 0.88 | 0.39 | 4.016 | 0.47 | 2.756 | 0.39     | N/A   | F07/F10     | 22.81 |



# 3-PC FULL PORT | TH, SW, BW Series NS55

## PRESSURE VS. TEMPERATURE | SERIES NS55 Seat Pressure Ratings



| SIZE   | Cv   |
|--------|------|
| 1/4"   | 7    |
| 3/8"   | 8    |
| 1/2"   | 15   |
| 3/4"   | 40   |
| 1"     | 70   |
| 1-1/4" | 110  |
| 1-1/2" | 250  |
| 2"     | 400  |
| 2-1/2" | 600  |
| 3"     | 1100 |
| 4"     | 2000 |

### Break Away Torque for RTFE Seats

| SIZE   | IN.-LBS. |
|--------|----------|
| 1/4"   | 62       |
| 3/8"   | 62       |
| 1/2"   | 62       |
| 3/4"   | 80       |
| 1"     | 141      |
| 1-1/4" | 150      |
| 1-1/2" | 257      |
| 2"     | 319      |
| 2-1/2" | 522      |
| 3"     | 691      |
| 4"     | 1151     |

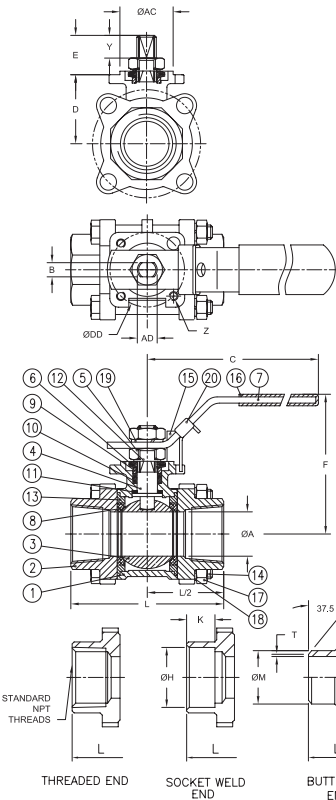
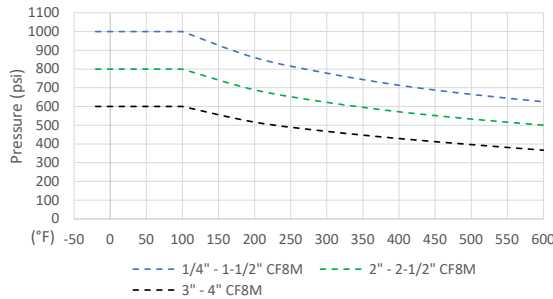
FOR OTHER SEAT MATERIAL CONSULT FACTORY



SAMPLE PART #  
**NS55-TH-0300-XXX**

Valve Series  
End Connection  
Valve Size  
Seat Material  
Special Designation  
Additional Designation

## PRESSURE VS. TEMPERATURE | SERIES NS55 Body & End Cap Ratings B16.34-2020



### STANDARDS

Design  
End Connections  
Pressure Testing  
Mounting  
Marking System for Valves  
Material Certification  
Safety

ASME B16.34  
ASME B1.20.1, B16.11  
API 598  
ISO 5211  
MSS SP-25  
EN 10204-3.1 MTR  
NSF/ANSI 61-2016  
NSF/ANSI 372-2011  
ISO 9001:2015

Quality Assurance



VALVE  
NSF/ANSI 61  
ALSO CERTIFIED TO  
NSF/ANSI 372  
<5DZ0>

### MATERIALS LIST

| NO. | PART NAME         | QTY.  | STAINLESS STEEL                | Repair Kit |
|-----|-------------------|-------|--------------------------------|------------|
| 1   | BODY              | 1     | ASTM A351 GRADE CF8M           |            |
| 2   | TH END CAP        | 2     | ASTM A351 GRADE CF8M           |            |
| 2   | BW/SW END CAP     | 2     | ASTM A351 GRADE CF3M           |            |
| 3   | BALL              | 1     | 1/4" THRU 3/8" ASTM A276 SS316 |            |
| 3   | BALL              | 1     | 1/2" THRU 4" ASTM A351 GR CF8M |            |
| 4   | STEM              | 1     | ASTM A276 SS316                |            |
| 5   | STEM NUT          | 2     | AISI 304                       |            |
| 6   | BELLEVILLE WASHER | 2     | AISI 301                       |            |
| 7   | HANDLE            | 1     | AISI 304                       |            |
| 8   | SEAT              | 2     | RTFE or PTFE                   | ✓          |
| 9   | GLAND BUSHING     | 1     | AISI 304                       |            |
| 10  | GLAND PACKING     | 1 set | PTFE                           | ✓          |
| 11  | THRUST WASHER     | 1     | RTFE                           | ✓          |
| 12  | LOCK SADDLE       | 1     | AISI 304                       |            |
| 13  | JOINT GASKET      | 2     | PTFE                           | ✓          |
| 14  | BODY BOLT/STUD    | *     | ASTM A193 GRADE B8             |            |
| 15  | STOP BOLT         | 1     | AISI 304                       |            |
| 16  | HANDLE SLEEVE     | 1     | VINYL                          |            |
| 17  | BODY NUT          | #     | ASTM A194 GRADE 8              | ✓          |
| 18  | LOCK WASHER       | #     | AISI 304                       |            |
| 19  | STEM WASHER       | 1     | AISI 304                       |            |
| 20  | HANDLE LOCK       | 1     | AISI 304                       |            |

\* 1/4" THRU 3" QTY = 4 PCS  
4" QTY = 6 PCS

# 1/4" THRU 2" QTY = 4 PCS  
2-1/2" THRU 3" QTY = 8 PCS  
4" QTY = 12 PCS

## DIMENSIONS (IN)

| Size   | Valve Dimensions |       |       |      |      |      |      |      | Actuator Mounting Dimensions |      |      |      |      |     |      |       | (LBS) |     |          |
|--------|------------------|-------|-------|------|------|------|------|------|------------------------------|------|------|------|------|-----|------|-------|-------|-----|----------|
|        | A                | B     | C     | D    | E    | F    | H    | K    | L                            | L1   | M    | T    | Y    | Z   | AC   | AD    |       | DD  | ISO 5211 |
| 1/4"   | 0.46             | 0.256 | 5.12  | 1.15 | 0.78 | 2.95 | 0.56 | 0.39 | 2.51                         | 2.47 | 0.64 | 0.06 | 0.29 | M5  | 0.98 | 0.374 | 1.417 | F03 | 1.4      |
| 3/8"   | 0.50             | 0.256 | 5.12  | 1.15 | 0.78 | 2.95 | 0.69 | 0.39 | 2.51                         | 2.47 | 0.69 | 0.06 | 0.29 | M5  | 0.98 | 0.374 | 1.417 | F03 | 1.4      |
| 1/2"   | 0.59             | 0.256 | 5.12  | 1.15 | 0.78 | 2.95 | 0.86 | 0.39 | 2.59                         | 2.59 | 0.89 | 0.06 | 0.29 | M5  | 0.98 | 0.374 | 1.417 | F03 | 1.4      |
| 3/4"   | 0.79             | 0.256 | 5.12  | 1.28 | 0.69 | 3.03 | 1.07 | 0.51 | 3.00                         | 3.00 | 1.08 | 0.06 | 0.25 | M5  | 0.98 | 0.374 | 1.417 | F03 | 1.7      |
| 1"     | 0.98             | 0.315 | 6.30  | 1.53 | 0.81 | 3.35 | 1.33 | 0.51 | 3.39                         | 3.39 | 1.34 | 0.06 | 0.48 | M5  | 1.18 | 0.433 | 1.654 | F04 | 2.4      |
| 1-1/4" | 1.26             | 0.315 | 6.30  | 1.59 | 0.96 | 3.62 | 1.69 | 0.51 | 4.05                         | 4.05 | 1.68 | 0.06 | 0.43 | M5  | 1.18 | 0.433 | 1.654 | F04 | 3.7      |
| 1-1/2" | 1.50             | 0.382 | 7.28  | 1.82 | 1.22 | 4.02 | 1.93 | 0.51 | 4.70                         | 4.70 | 1.91 | 0.06 | 0.54 | M6  | 1.38 | 0.551 | 1.969 | F05 | 5.5      |
| 2"     | 1.97             | 0.382 | 7.28  | 2.15 | 1.22 | 4.33 | 2.41 | 0.63 | 5.17                         | 5.17 | 2.38 | 0.06 | 0.54 | M6  | 1.38 | 0.551 | 1.969 | F05 | 8.0      |
| 2-1/2" | 2.56             | 0.472 | 10.24 | 2.81 | 1.68 | 5.91 | 2.91 | 0.63 | 6.46                         | 6.46 | 3.00 | 0.08 | 0.91 | M8  | 2.17 | 0.748 | 2.756 | F07 | 16.2     |
| 3"     | 3.15             | 0.472 | 10.24 | 3.33 | 1.55 | 6.38 | 3.54 | 0.63 | 7.19                         | 7.19 | 3.54 | 0.08 | 0.74 | M10 | 2.76 | 0.748 | 4.016 | F10 | 23.5     |
| 4"     | 3.94             | 0.591 | 11.42 | 4.19 | 2.06 | 7.48 | 4.55 | 0.79 | 9.28                         | 9.30 | 4.57 | 0.14 | 1.35 | M10 | 2.76 | 0.945 | 4.016 | F10 | 43.7     |

# Series NS90-F1 CLASS 150 | 1/2" - 2-1/2"

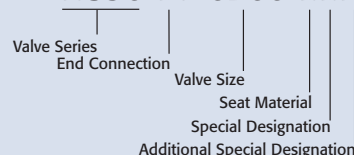


VALVE  
NSF/ANSI 61  
ALSO CERTIFIED TO  
NSF/ANSI 372  
<SDZ0>

| VALVE SIZE | VALVE Cv |
|------------|----------|
| 1/2"       | 15       |
| 3/4"       | 45       |
| 1"         | 85       |
| 1-1/2"     | 275      |
| 2"         | 460      |
| 2-1/2"     | 700      |
| 3"         | 1,100    |
| 4"         | 2,200    |

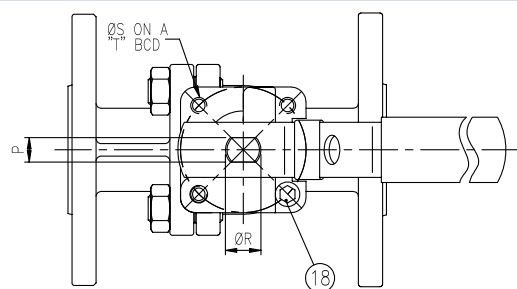
| BREAKAWAY TORQUES |        |
|-------------------|--------|
| SIZE              | IN-LBS |
| 1/2"              | 92     |
| 3/4"              | 127    |
| 1"                | 150    |
| 1-1/2"            | 311    |
| 2"                | 396    |
| 2-1/2"            | 657    |
| 3"                | 980    |
| 4"                | 1,700  |

## SAMPLE PART # NS90-F1-0200-XXX



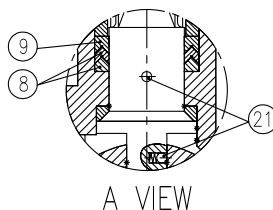
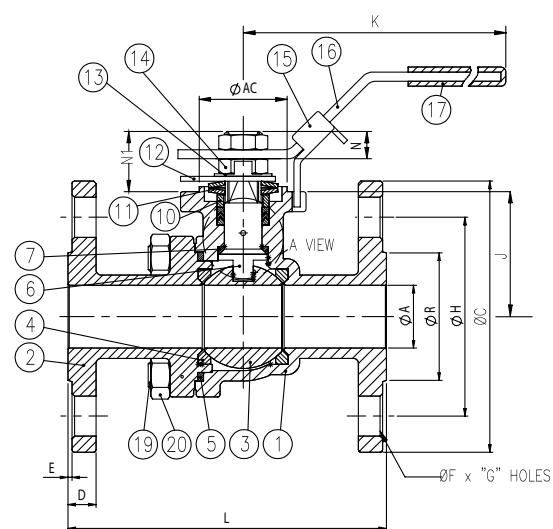
### STANDARDS

|                           |                       |
|---------------------------|-----------------------|
| DESIGN                    | ASME B16.34           |
| FACE TO FACE              | ASME B16.10           |
| FLANGE DIMENSIONS         | ASME B16.5            |
| PRESSURE TESTING          | API 598               |
| MOUNTING                  | ISO 5211              |
| MARKING SYSTEM FOR VALVES | MSS SP-25             |
| SAFETY INTEGRITY          | IEC 61508:2010; SIL 3 |
|                           | NSF/ANSI 61-2016      |
|                           | NSF/ANSI 372-2011     |
| MATERIAL CERTIFICATION    | EN 10204-3.1 MTR      |
| QUALITY ASSURANCE         | ISO 9001:2015         |



### Series NS90-F1

- 2 pc. Flanged Ball Valve
- ASME Class 150
- 1/2" - 2-1/2"



### MATERIALS LIST (1/2" - 2-1/2")

| NO. | PART NAME          | QTY. | MATERIAL             | Repair Kit |
|-----|--------------------|------|----------------------|------------|
| 1   | BODY               | 1    | ASTM A351 GRADE CF8M |            |
| 2   | END CAP            | 1    | ASTM A351 GRADE CF8M |            |
| 3   | BALL               | 1    | ASTM A351 GRADE CF8M |            |
| 4   | SEAT               | 2    | RTFE or PTFE         | ✓          |
| 5   | JOINT GASKET       | 1    | PTFE                 | ✓          |
| 6   | STEM               | 1    | ASTM A276 SS316      |            |
| 7   | STEM SEAL          | 1    | RTFE                 | ✓          |
| 8   | GLAND PACKING      | ^    | PTFE                 | ✓          |
| 9   | GLAND PACKING      | 1    | PTFE                 | ✓          |
| 10  | GLAND BUSHING      | 1    | AISI 304             |            |
| 11  | BELLEVILLE WASHER  | 2    | AISI 301             |            |
| 12  | LOCKING PLATE      | 1    | AISI 304             |            |
| 13  | LOCK SADDLE        | 1    | AISI 304             |            |
| 14  | STEM NUT           | 2    | AISI 304             |            |
| 15  | HANDLE LOCK        | 1    | AISI 304             |            |
| 16  | HANDLE             | 1    | AISI 304             |            |
| 17  | HANDLE SLEEVE      | 1    | VINYL                |            |
| 18  | STOP BOLT          | 1    | AISI 304             |            |
| 19  | BODY STUD          | *    | ASTM A193 GRADE B8   |            |
| 20  | BODY STUD NUT      | *    | ASTM A194 GRADE 8    |            |
| 21  | ANTI-STATIC DEVICE | 2    | AISI 316             |            |

^ 1/2" - 1" - 2 PCS  
1-1/2" - 2-1/2" - 3 PCS  
\*1/2" - 2" - 4 PCS  
2-1/2" - 8 PCS

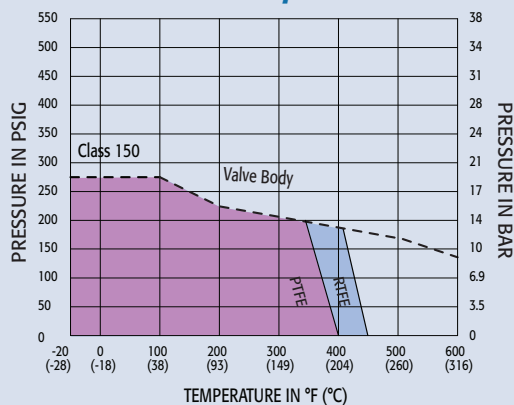
### DIMENSIONS (IN)

| Size   | Valve Dimensions |      |      |      |      |      |   |      |      |       |      |      | Actuator Mounting Dimensions |      |      |       |      |    |       |     | ISO 5211 | (LBS) |
|--------|------------------|------|------|------|------|------|---|------|------|-------|------|------|------------------------------|------|------|-------|------|----|-------|-----|----------|-------|
|        | ØA               | ØB   | ØC   | D    | E    | F    | G | H    | J    | K     | L    | M    | ØAC                          | N    | N1   | P     | R    | S  | T     |     |          |       |
| 1/2"   | 0.59             | 1.38 | 3.50 | 0.44 | 0.06 | 0.63 | 4 | 2.38 | 1.36 | 6.69  | 4.26 | 3.15 | 1.18                         | 0.36 | 0.91 | 0.315 | 0.44 | M5 | 1.654 | F04 | 3.7      |       |
| 3/4"   | 0.79             | 1.69 | 3.88 | 0.44 | 0.06 | 0.63 | 4 | 2.75 | 1.65 | 6.69  | 4.62 | 3.43 | 1.18                         | 0.40 | 0.91 | 0.315 | 0.44 | M5 | 1.654 | F04 | 4.6      |       |
| 1"     | 0.98             | 2.00 | 4.25 | 0.56 | 0.06 | 0.63 | 4 | 3.12 | 1.96 | 8.15  | 5.00 | 4.06 | 1.38                         | 0.32 | 0.93 | 0.382 | 0.56 | M6 | 1.969 | F05 | 6.8      |       |
| 1-1/2" | 1.50             | 2.88 | 5.00 | 0.75 | 0.06 | 0.63 | 4 | 3.88 | 3.08 | 10.28 | 6.50 | 6.02 | 2.17                         | 0.58 | 1.37 | 0.472 | 0.75 | M8 | 2.756 | F07 | 13.6     |       |
| 2"     | 1.97             | 3.62 | 6.00 | 0.75 | 0.06 | 0.75 | 4 | 4.75 | 3.40 | 10.28 | 7.02 | 6.38 | 2.17                         | 0.58 | 1.37 | 0.472 | 0.75 | M8 | 2.756 | F07 | 19.2     |       |
| 2-1/2" | 2.56             | 4.12 | 7.00 | 0.75 | 0.06 | 0.75 | 4 | 5.50 | 3.83 | 10.28 | 7.48 | 6.81 | 2.17                         | 0.58 | 1.37 | 0.472 | 0.75 | M8 | 2.756 | F07 | 30       |       |



# 3" - 4" | CLASS 150 Series NS90-F1

**Pressure vs. Temperature Chart**



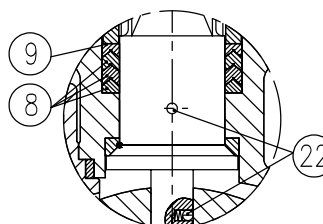
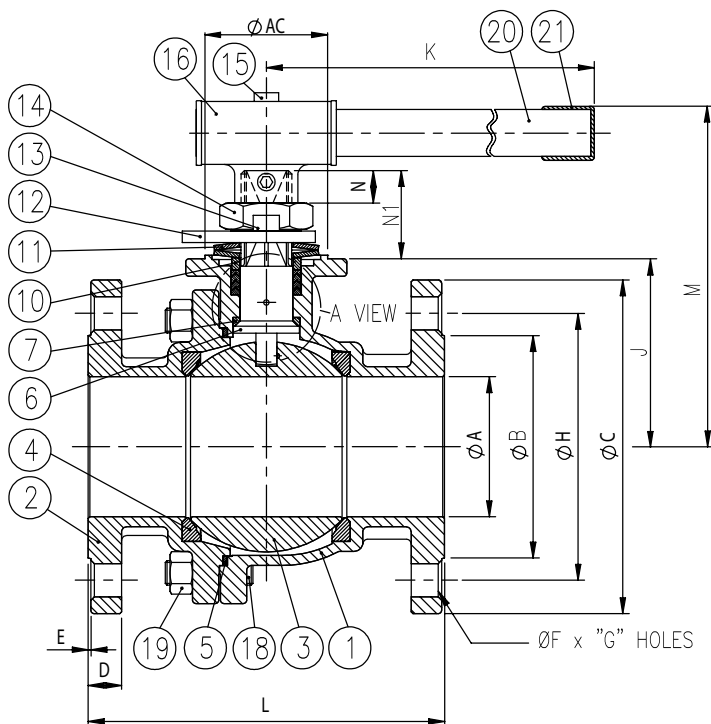
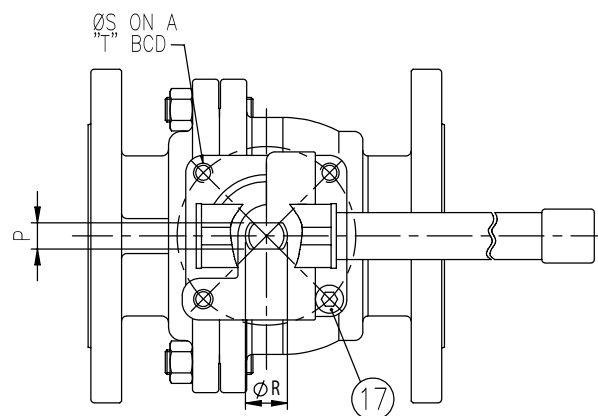
NOTE: Dotted line shows the rating for valve body. Solid line shows the rating for valve seat. Both ratings need to be considered when determining the limitation of the valve for specific application. Consult factory for other seat materials.

## Series NS90-F1

- 2 pc. Flanged Ball Valve
- ASME Class 150
- 3" - 4"

### MATERIALS LIST (3" - 4")

| NO. | PART NAME          | QTY. | MATERIAL             | Repair Kit |
|-----|--------------------|------|----------------------|------------|
| 1   | BODY               | 1    | ASTM A351 GRADE CF8M |            |
| 2   | END CAP            | 1    | ASTM A351 GRADE CF8M |            |
| 3   | BALL               | 1    | ASTM A351 GRADE CF8M |            |
| 4   | SEAT               | 2    | RTFE or PTFE         | ✓          |
| 5   | JOINT GASKET       | 1    | PTFE                 | ✓          |
| 6   | STEM               | 1    | ASTM A276 SS316      |            |
| 7   | STEM SEAL          | 1    | RTFE                 | ✓          |
| 8   | GLAND PACKING      | 3    | PTFE                 | ✓          |
| 9   | GLAND PACKING      | 1    | PTFE                 | ✓          |
| 10  | GLAND BUSHING      | 1    | AISI 304             |            |
| 11  | BELLEVILLE WASHER  | 2    | AISI 301             |            |
| 12  | LOCKING PLATE      | 1    | AISI 304             |            |
| 13  | LOCK SADDLE        | 1    | AISI 304             |            |
| 14  | STEM NUT           | 1    | AISI 304             |            |
| 15  | HANDLE BOLT        | 2    | AISI 304             |            |
| 16  | HANDLE HUB         | 1    | AISI 304             |            |
| 17  | STOP PIN           | 1    | AISI 304             |            |
| 18  | BODY BOLT          | 8    | ASTM A193 GRADE B8   |            |
| 19  | BODY NUT           | 8    | ASTM A194 GRADE 8    |            |
| 20  | HANDLE BAR         | 1    | AISI 304             |            |
| 21  | HANDLE SLEEVE      | 1    | VINYL                |            |
| 22  | ANTI-STATIC DEVICE | 2    | AISI 316             |            |

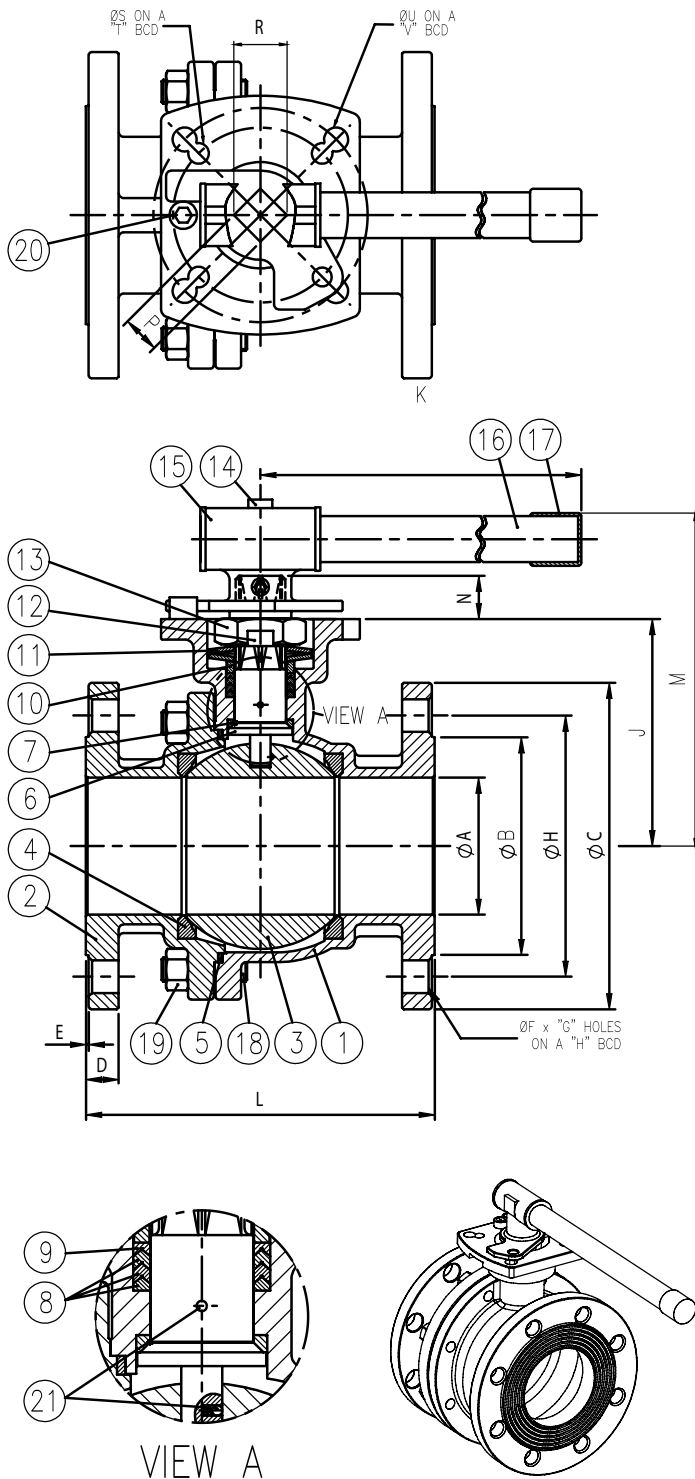


A VIEW

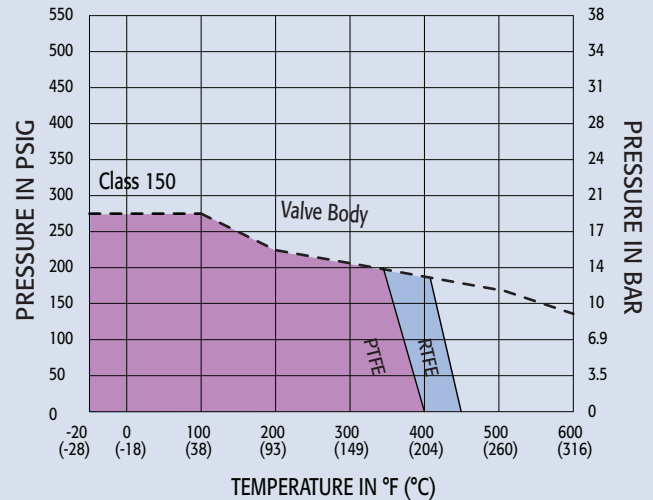
### DIMENSIONS (IN)

| Size | Valve Dimensions |      |      |      |      |      |   |      |      |       |      |      | Actuator Mounting Dimensions |      |      |       |      |     |       |     | ISO 5211 | (LBS) |
|------|------------------|------|------|------|------|------|---|------|------|-------|------|------|------------------------------|------|------|-------|------|-----|-------|-----|----------|-------|
|      | ØA               | ØB   | ØC   | D    | E    | F    | G | H    | J    | K     | L    | M    | ØAC                          | N    | N1   | P     | R    | S   | T     |     |          |       |
| 3"   | 3.15             | 5.00 | 7.50 | 0.75 | 0.06 | 0.75 | 4 | 6.00 | 4.23 | 14.37 | 8.01 | 6.95 | 2.76                         | 0.93 | 1.81 | 0.591 | 0.94 | M10 | 4.016 | F10 | 41       |       |
| 4"   | 3.94             | 6.19 | 9.00 | 0.94 | 0.06 | 0.75 | 8 | 7.50 | 4.82 | 14.37 | 9.00 | 7.52 | 2.76                         | 0.93 | 1.81 | 0.591 | 0.94 | M10 | 4.016 | F10 | 65       |       |

# Series NSD9-F1 DIRECT MOUNT | CLASS 150 | 6"



**Pressure vs. Temperature Chart**



NOTE: Dotted line shows the rating for valve body. Solid line shows the rating for valve seat. Both ratings need to be considered when determining the limitation of the valve for specific application. Consult factory for other seat materials.

## MATERIALS LIST (6")

| NO. | PART NAME          | QTY. | MATERIAL             | Repair Kit |
|-----|--------------------|------|----------------------|------------|
| 1   | BODY               | 1    | ASTM A351 GRADE CF8M |            |
| 2   | END CAP            | 1    | ASTM A351 GRADE CF8M |            |
| 3   | BALL               | 1    | ASTM A351 GRADE CF8M |            |
| 4   | SEAT               | 2    | RTFE or PTFE         | ✓          |
| 5   | JOINT GASKET       | 1    | PTFE                 | ✓          |
| 6   | STEM               | 1    | ASTM A276 SS316      |            |
| 7   | STEM SEAL          | 1    | RTFE                 | ✓          |
| 8   | GLAND PACKING      | 3    | PTFE                 | ✓          |
| 9   | GLAND PACKING      | 1    | PTFE                 | ✓          |
| 10  | GLAND BUSHING      | 1    | AISI 304             |            |
| 11  | BELLEVILLE WASHER  | 2    | AISI 301             |            |
| 12  | LOCK SADDLE        | 1    | AISI 304             |            |
| 13  | STEM NUT           | 1    | AISI 304             |            |
| 14  | HANDLE BOLT        | 2    | AISI 304             |            |
| 15  | HANDLE HUB         | 1    | AISI 304             |            |
| 16  | HANDLE BAR         | 1    | CARBON STEEL         |            |
| 17  | STOP PIN           | 1    | AISI 304             |            |
| 18  | HANDLE SLEEVE      | 1    | VINYL                |            |
| 19  | BODY STUD          | 10   | ASTM A193 GRADE B8   |            |
| 20  | BODY STUD NUT      | 10   | ASTM A194 GRADE 8    |            |
| 21  | STOP BOLT          | 1    | AISI 304             |            |
| 22  | ANTI-STATIC DEVICE | 2    | AISI 316             |            |

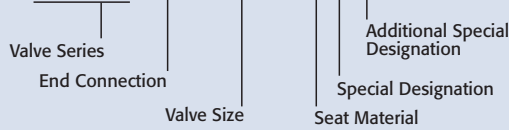
## DIMENSIONS (IN)

| Size | Valve Dimensions |      |       |      |      |      |   |      |      |       |       | Actuator Mounting Dimensions |      |       |      |      |       |      |       |         | ISO 5211 | (LBS) |
|------|------------------|------|-------|------|------|------|---|------|------|-------|-------|------------------------------|------|-------|------|------|-------|------|-------|---------|----------|-------|
|      | ØA               | ØB   | ØC    | D    | E    | F    | G | H    | J    | K     | L     | M                            | N    | P     | R    | S    | T     | U    | V     |         |          |       |
| 6"   | 5.91             | 8.50 | 11.00 | 1.00 | 0.06 | 0.87 | 8 | 9.50 | 8.28 | 27.76 | 15.50 | 12.50                        | 1.12 | 1.063 | 1.41 | 0.55 | 4.921 | 0.71 | 5.512 | F12/F14 | 145      |       |



# 6" | CLASS 150 | DIRECT MOUNT Series NSD9-F1

SAMPLE PART #  
**NSD9-F1-0600-XXX**



VALVE  
NSF/ANSI 61  
ALSO CERTIFIED TO  
NSF/ANSI 372  
<5DZ0>

## STANDARDS

|                           |                       |
|---------------------------|-----------------------|
| DESIGN                    | ASME B16.34           |
| FACE TO FACE              | ASME B16.10           |
| FLANGE DIMENSIONS         | ASME B16.5            |
| PRESSURE TESTING          | API 598               |
| MOUNTING                  | ISO 5211              |
| MARKING SYSTEM FOR VALVES | MSS SP-25             |
| SAFETY INTEGRITY          | IEC 61508:2010; SIL 3 |
|                           | NSF/ANSI 61-2016      |
|                           | NSF/ANSI 372-2011     |
| MATERIAL CERTIFICATION    | EN 10204-3.1 MTR      |
| QUALITY ASSURANCE         | ISO 9001:2015         |



## Series NSD9-F1

- 2 pc. Direct Mount Flanged Ball Valve
- ASME Class 150
- 6"

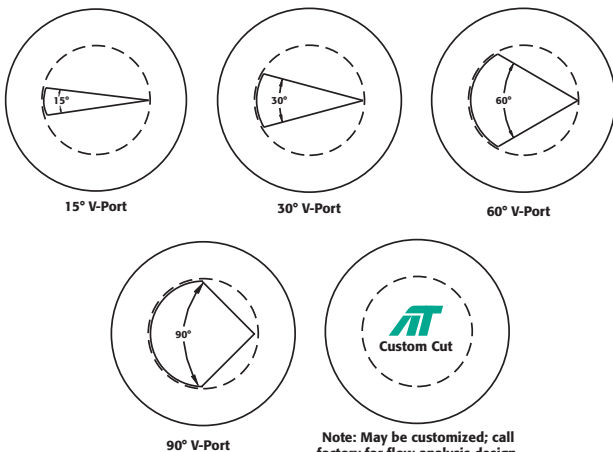
| VALVE SIZE | VALVE Cv |
|------------|----------|
| 6"         | 5,150    |

| Break Away Torque for RTFE Seats |          |
|----------------------------------|----------|
| SIZE                             | IN.-LBS. |
| 6"                               | 2,550    |

## NSV9 Series:

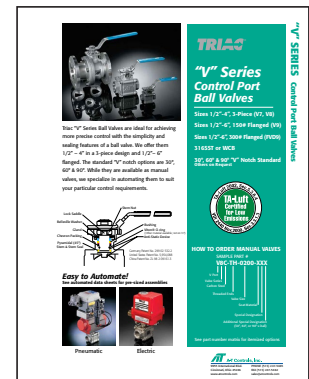
The NS90 & NSD9 Series' are available with a **v-port ball option** (15°, 30°, 60°, or 90° V-notch). V-port valves offer better and more consistent control than traditional round ported ball valves. We offer this valve with the control port cast and machined into the ball, not in the seat. This allows for much better flow characteristics and eliminates the need to replace seats. The 15° and 30° options allow for finer tapered control throughout the valve rotation, and the 60° & 90° offer a larger Cv in addition to controlled flow.

The RTFE seat is standard in the both the NSV9 and NSD9 Class 150 and Class 300. Please note that 50/50 STFE seats cannot be used in Series NSV9 valves.



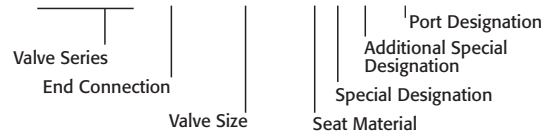
## Series NSV9

- 2 pc. Flanged Ball Valve
- V-Port
- ASME Class 150 or 300
- 1/2" - 6"



\* Refer to pg 3 of the V-Series Control Port Ball Valve Catalog for Cv values.

SAMPLE PART #  
**NSV9-F1-0600-XXX-6**



# Series NSD9-F3 DIRECT MOUNT | CLASS 300 | 1/2" - 2-1/2"



VALVE  
NSF/ANSI 61  
ALSO CERTIFIED TO  
NSF/ANSI 372  
<5DZ0>

SAMPLE PART #  
**NSD9-F3-0200-XXX**

Valve Series | End Connection | Valve Size | Additional Special Designation | Special Designation | Seat Material

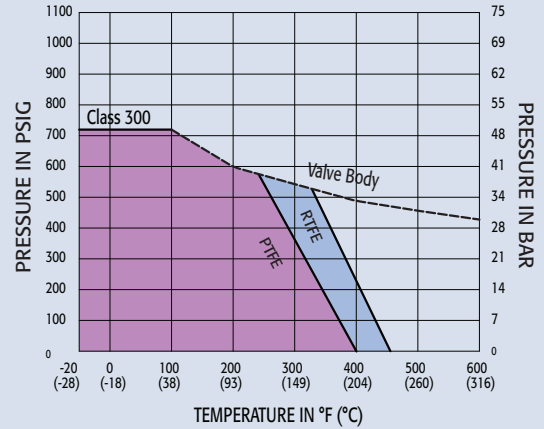
### STANDARDS

Design  
Face to Face  
Flange Dimensions  
Pressure Testing  
Sulfide Stress Protection  
Safety Integrity

ASME B16.34  
ASME B16.10  
ASME B16.5  
API 598  
NACE MR0175  
IEC 61508:2010; SIL 3  
NSF/ANSI 61-2016  
NSF/ANSI 372-2011  
ISO 5211  
MSS SP-25  
EN 10204-3.1 MTR  
ISO 9001:2015

Mounting  
Marking System for Valves  
Material Certification  
Quality Assurance

Pressure vs. Temperature Chart  
for Valves 1/2" to 6"



NOTE: Dotted line shows the rating for valve body. Solid line shows the rating for valve seat. Both ratings need to be considered when determining the limitation of the valve for specific application. Consult factory for other seat materials.

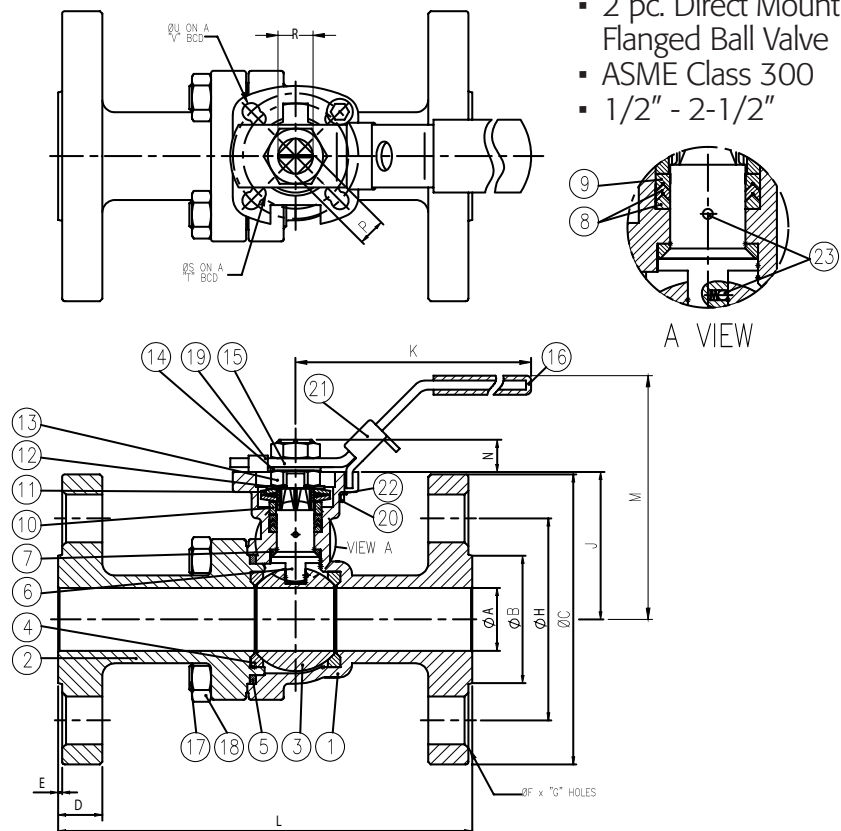
### MATERIALS LIST (1/2" - 2-1/2")

| NO. | PART NAME          | QTY. | MATERIAL             | Repair Kit |
|-----|--------------------|------|----------------------|------------|
| 1   | BODY               | 1    | ASTM A351 GRADE CF8M |            |
| 2   | END CAP            | 1    | ASTM A351 GRADE CF8M |            |
| 3   | BALL               | 1    | ASTM A351 GRADE CF8M |            |
| 4   | SEAT               | 2    | RTFE or PTFE         | ✓          |
| 5   | JOINT GASKET       | 1    | PTFE                 | ✓          |
| 6   | STEM               | 1    | ASTM A276 SS316      |            |
| 7   | STEM SEAL          | 1    | RTFE                 | ✓          |
| 8   | GLAND PACKING      | &    | PTFE                 | ✓          |
| 9   | GLAND PACKING      | 1    | PTFE                 | ✓          |
| 10  | GLAND BUSHING      | 1    | AISI 304             |            |
| 11  | BELLEVILLE WASHER  | 2    | AISI 301             |            |
| 12  | LOCK SADDLE        | 1    | AISI 304             |            |
| 13  | STEM NUT           | 2    | AISI 304             |            |
| 14  | STEM WASHER        | 1    | AISI 304             |            |
| 15  | HANDLE             | 1    | AISI 304             |            |
| 16  | HANDLE SLEEVE      | 1    | VINYL                |            |
| 17  | BODY STUD          | *    | ASTM A193 GRADE B8   |            |
| 18  | BODY STUD NUT      | *    | ASTM A194 GRADE 8    |            |
| 19  | STOP BOLT          | 1    | AISI 304             |            |
| 20  | STOP BOLT NUT      | 1    | AISI 304             |            |
| 21  | HANDLE LOCK        | 1    | AISI 304             |            |
| 22  | STOP BOLT WASHER   | 1    | AISI 304             |            |
| 23  | ANTI-STATIC DEVICE | 2    | AISI 316             |            |

\* 1/2" - 2" - 4 PCS  
2-1/2" - 8 PCS  
& 1/2" - 1" - QTY 2  
1-1/2" - 2-1/2" - QTY 3

### Series NSD9-F3

- 2 pc. Direct Mount Flanged Ball Valve
- ASME Class 300
- 1/2" - 2-1/2"



### DIMENSIONS (IN)

| Size   | Valve Dimensions |      |      |      |      |      |   |      |      |       |      | Actuator Mounting Dimensions |      |       |      |      |       |      |       | ISO 5211 | (LBS) |
|--------|------------------|------|------|------|------|------|---|------|------|-------|------|------------------------------|------|-------|------|------|-------|------|-------|----------|-------|
|        | ØA               | ØB   | ØC   | D    | E    | F    | G | H    | J    | K     | L    | M                            | N    | P     | R    | S    | T     | U    | V     |          |       |
| 1/2"   | 0.59             | 1.38 | 3.75 | 0.56 | 0.06 | 0.63 | 4 | 2.62 | 1.92 | 6.50  | 5.50 | 3.33                         | 0.39 | 0.433 | 0.55 | 0.26 | 1.654 | 0.28 | 1.969 | F04/F05  | 5     |
| 3/4"   | 0.79             | 1.69 | 4.62 | 0.62 | 0.06 | 0.75 | 4 | 3.25 | 2.50 | 6.50  | 6.00 | 3.92                         | 0.41 | 0.433 | 0.55 | 0.26 | 1.654 | 0.28 | 1.969 | F04/F05  | 8     |
| 1"     | 0.98             | 2.00 | 4.88 | 0.69 | 0.06 | 0.75 | 4 | 3.50 | 2.50 | 6.50  | 6.50 | 3.92                         | 0.41 | 0.433 | 0.55 | 0.26 | 1.654 | 0.28 | 1.969 | F04/F05  | 10.5  |
| 1-1/2" | 1.50             | 2.88 | 6.12 | 0.81 | 0.06 | 0.87 | 4 | 4.50 | 3.51 | 10.31 | 7.50 | 5.79                         | 0.75 | 0.748 | 0.94 | 0.39 | 2.756 | 0.47 | 4.016 | F07/F10  | 22    |
| 2"     | 1.97             | 1.26 | 6.50 | 0.88 | 0.06 | 0.75 | 8 | 5.00 | 3.80 | 10.31 | 8.50 | 6.09                         | 0.75 | 0.748 | 0.94 | 0.39 | 2.756 | 0.47 | 4.016 | F07/F10  | 28.5  |
| 2-1/2" | 2.56             | 4.12 | 7.50 | 1.00 | 0.06 | 0.87 | 8 | 5.88 | 4.57 | 10.31 | 9.50 | 6.85                         | 0.75 | 0.748 | 0.94 | 0.39 | 2.756 | 0.47 | 4.016 | F07/F10  | 42    |



# 3" - 6" | CLASS 300 | DIRECT MOUNT Series NSD9-F3

| Break Away Torque for RTFE Seats |        |
|----------------------------------|--------|
| SIZE                             | IN-LBS |
| 1/2"                             | 125    |
| 3/4"                             | 175    |
| 1"                               | 220    |
| 1-1/2"                           | 450    |
| 2"                               | 525    |
| 2-1/2"                           | 750    |
| 3"                               | 1,400  |
| 4"                               | 1,900  |
| 6"                               | 3,050  |

| VALVE SIZE | VALVE Cv |
|------------|----------|
| 1/2"       | 15       |
| 3/4"       | 45       |
| 1"         | 85       |
| 1-1/2"     | 275      |
| 2"         | 450      |
| 2-1/2"     | 700      |
| 3"         | 1,100    |
| 4"         | 2,200    |
| 6"         | 5,150    |

## Series NSD9-F3

- 2 pc. Direct Mount Flanged Ball Valve
- ANSI Class 300
- 3" - 6"

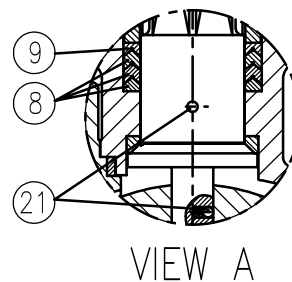
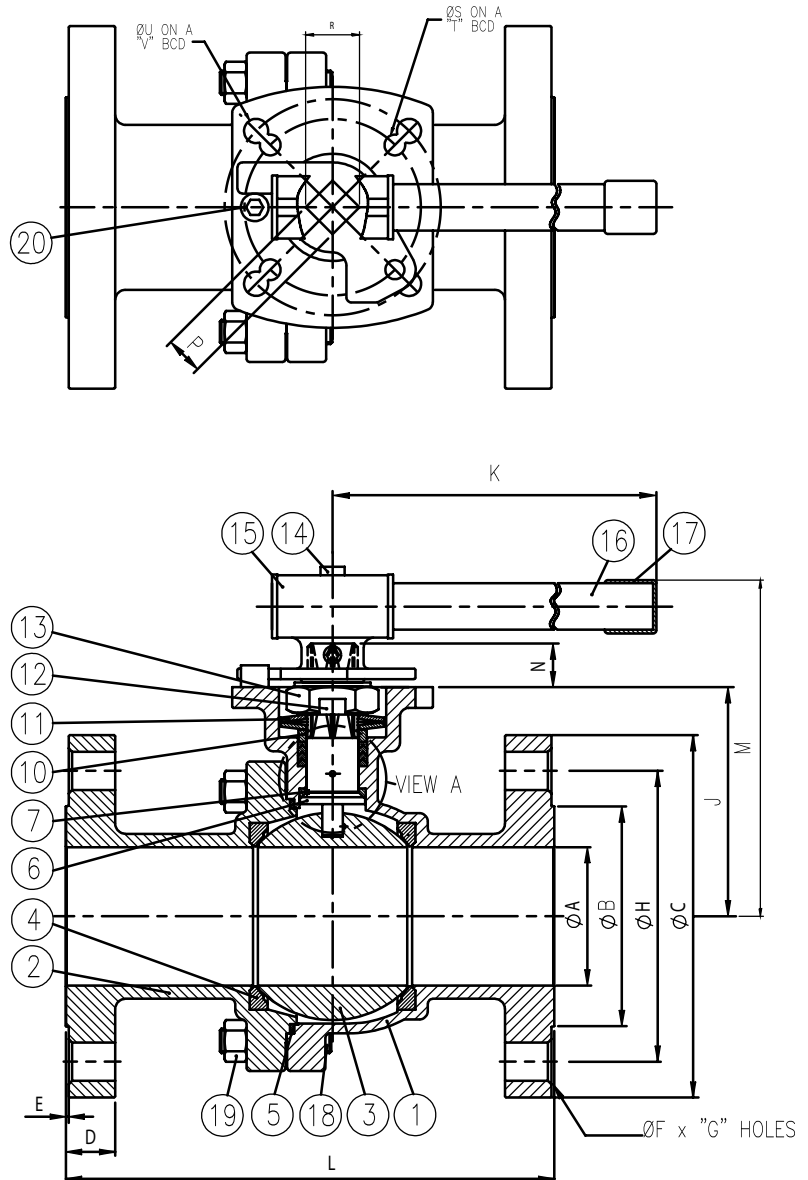
### MATERIALS LIST (3" - 6")

| NO. | PART NAME          | QTY. | MATERIAL                                | Repair Kit |
|-----|--------------------|------|---|------------|
| 1   | BODY               | 1    | ASTM A351 GRADE CF8M                    |            |
| 2   | END CAP            | 1    | ASTM A351 GRADE CF8M                    |            |
| 3   | BALL               | 1    | ASTM A351 GRADE CF8M                    |            |
| 4   | SEAT               | 2    | RTFE or PTFE                            | ✓          |
| 5   | JOINT GASKET       | 1    | PTFE                                    | ✓          |
| 6   | STEM               | 1    | ASTM A276 SS316                         |            |
| 7   | STEM SEAL          | 1    | RTFE                                    | ✓          |
| 8   | GLAND PACKING      | 3    | PTFE                                    | ✓          |
| 9   | GLAND PACKING      | 1    | PTFE                                    | ✓          |
| 10  | GLAND BUSHING      | 1    | AISI 304                                |            |
| 11  | BELLEVILLE WASHER  | 2    | AISI 301                                |            |
| 12  | LOCK SADDLE        | 1    | AISI 304                                |            |
| 13  | STEM NUT           | 1    | AISI 304                                |            |
| 14  | HANDLE BOLT        | 2    | AISI 304                                |            |
| 15  | HANDLE HUB         | 1    | AISI 304                                |            |
| 16  | HANDLE BAR         | 1    | 3" - 4" - AISI 304<br>6" - CARBON STEEL |            |
| 17  | STOP PIN           | 1    | AISI 304                                |            |
| 18  | HANDLE SLEEVE      | 1    | VINYL                                   |            |
| 19  | BODY STUD          | #    | ASTM A193 GRADE B8                      |            |
| 20  | BODY STUD NUT      | #    | ASTM A194 GRADE 8                       |            |
| 21  | STOP BOLT          | 1    | AISI 304                                |            |
| 22  | ANTI-STATIC DEVICE | 2    | AISI 316                                |            |

# 3" - 4" - QTY 8  
6" - QTY 10

### DIMENSIONS (IN)

| Size | Valve Dimensions |      |       |      |      |      |    |       |      |       |       | Actuator Mounting Dimensions |      |       |      |      |       |      |       |         |     | ISO 5211 | (LBS) |
|------|------------------|------|-------|------|------|------|----|-------|------|-------|-------|------------------------------|------|-------|------|------|-------|------|-------|---------|-----|----------|-------|
|      | ØA               | ØB   | ØC    | D    | E    | F    | G  | H     | J    | K     | L     | M                            | N    | P     | R    | S    | T     | U    | V     |         |     |          |       |
| 3"   | 3.15             | 5.00 | 8.25  | 1.12 | 0.06 | 0.87 | 8  | 6.62  | 5.22 | 14.37 | 11.12 | 8.05                         | 0.91 | 0.866 | 1.18 | 0.47 | 4.016 | 0.55 | 4.921 | F10/F12 | 59  |          |       |
| 4"   | 3.94             | 6.19 | 10.00 | 1.25 | 0.06 | 0.87 | 8  | 7.88  | 6.18 | 14.37 | 12.00 | 9.00                         | 0.91 | 0.866 | 1.18 | 0.47 | 4.016 | 0.55 | 4.921 | F10/F12 | 96  |          |       |
| 6"   | 5.91             | 8.50 | 12.50 | 1.44 | 0.06 | 0.87 | 12 | 10.62 | 8.28 | 27.76 | 15.87 | 12.50                        | 1.12 | 1.063 | 1.41 | 0.55 | 4.921 | 0.71 | 5.512 | F12/F14 | 213 |          |       |



# Series NS RESILIENT SEATED BUTTERFLY

## Series NS

**NSF 61 & 372 rated, Dead-End Service**  
Manual and Automated Butterfly Valves  
Lug or Wafer body, ANSI 125/150 flanges

- » Bi-directional, bubble tight shutoff for full-pressure differential
- » Vulcanized Molded rubber seat design
- » ASTM A395 DI & A351 CF8M body materials
- » Multiple disc materials available
- » Square stems and ISO 5211 mounting pad for direct mounting



### STANDARDS

|                        |   |
|------------------------|---|
| DESIGN                 | API 609, ASME B16.34, ASME B16.42, MSS SP-67  |
| FACE TO FACE           | API 609                                       |
| END CONNECTION         | ASME B16.5 (Class 150), PN 10/16 (Wafer only) |
| PRESSURE TESTING       | API 598                                       |
| MOUNTING               | ISO 5211                                      |
| MARKINGS               | API 609, ASME B16.34, MSS SP-25               |
| MATERIAL CERTIFICATION | EN 10204-3.1 MTR                              |
| QUALITY ASSURANCE      | ISO 9001:2015                                 |

### CERTIFICATIONS

|                                  |   |
|----------------------------------|---|
| DRINKING WATER SYSTEM COMPONENTS | NSF/ANSI 61 & 372 Health Effects & Lead Content |
| CANADA REGISTRATION              | CRN OC20682.5                                   |
| ABS APPROVAL                     | (Pending)                                       |

### Page Reference

- Page 12.....Product Details and Standards
- Page 13.....Bill of Materials 2"-14"
- Page 14.....Bill of Materials 16"-24"
- Page 15.....Dimensions
- Page 16.....Cv Values and Operating Torques and Pressure & Temperature Ratings
- Page 17.....Handles and Gear Operator Sizing
- Page 18.....Automation Capabilities
- Page 19.....How To Order: NS Series Part Number Matrix



\* Refer to the Resilient Seated Butterfly Valve Catalog for NS Series Automated Package Sizing and other material options, when NSF 61 is not required.

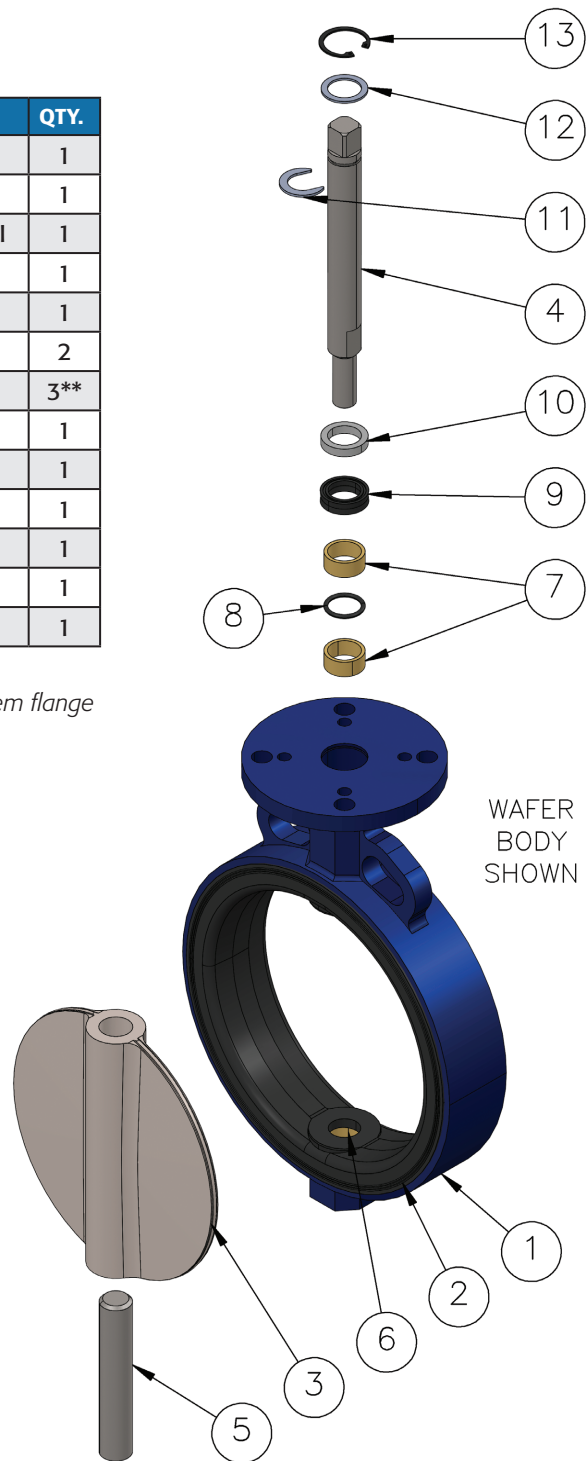
## Bill of Materials | 2" - 14"

### Bill of Materials (2"-14")

| ITEM | DESCRIPTION    | MATERIAL                    | QTY. |
|------|----------------|-----------------------------|------|
| 1    | Body           | ASTM A395 / A351 CF8M       | 1    |
| 2    | Seat           | EPDM                        | 1    |
| 3    | Disc           | A351 CF8M / Nylon Coated DI | 1    |
| 4    | Upper Stem*    | 17-4 PH®                    | 1    |
| 5    | Lower Stem*    | 17-4 PH®                    | 1    |
| 6    | Flange Bushing | Brass                       | 2    |
| 7    | Bushing        | Brass                       | 3**  |
| 8    | O-Ring         | Buna-N                      | 1    |
| 9    | X-Ring         | Buna-N                      | 1    |
| 10   | Bushing        | PTFE                        | 1    |
| 11   | Stem Retainer  | ASTM A276 304               | 1    |
| 12   | Thrust Washer  | ASTM A276 304               | 1    |
| 13   | Snap Ring      | SK7 Steel                   | 1    |

\*2"-3" valves have a one-piece stem

\*\*one bushing(7) is not shown; it is located below lower stem flange bushing(6)





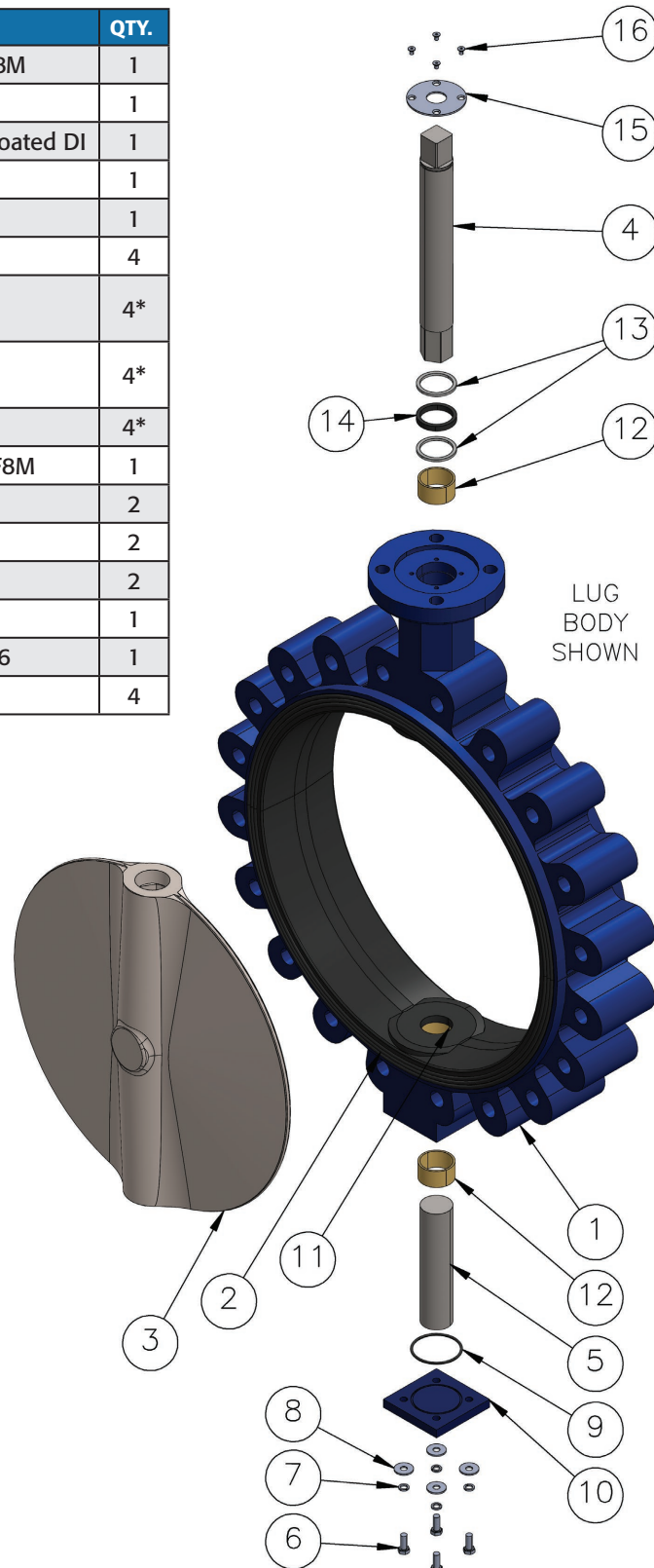
# Series NS RESILIENT SEATED BUTTERFLY

Bill of Materials | 16" - 24"

## Bill of Materials (16"-24")

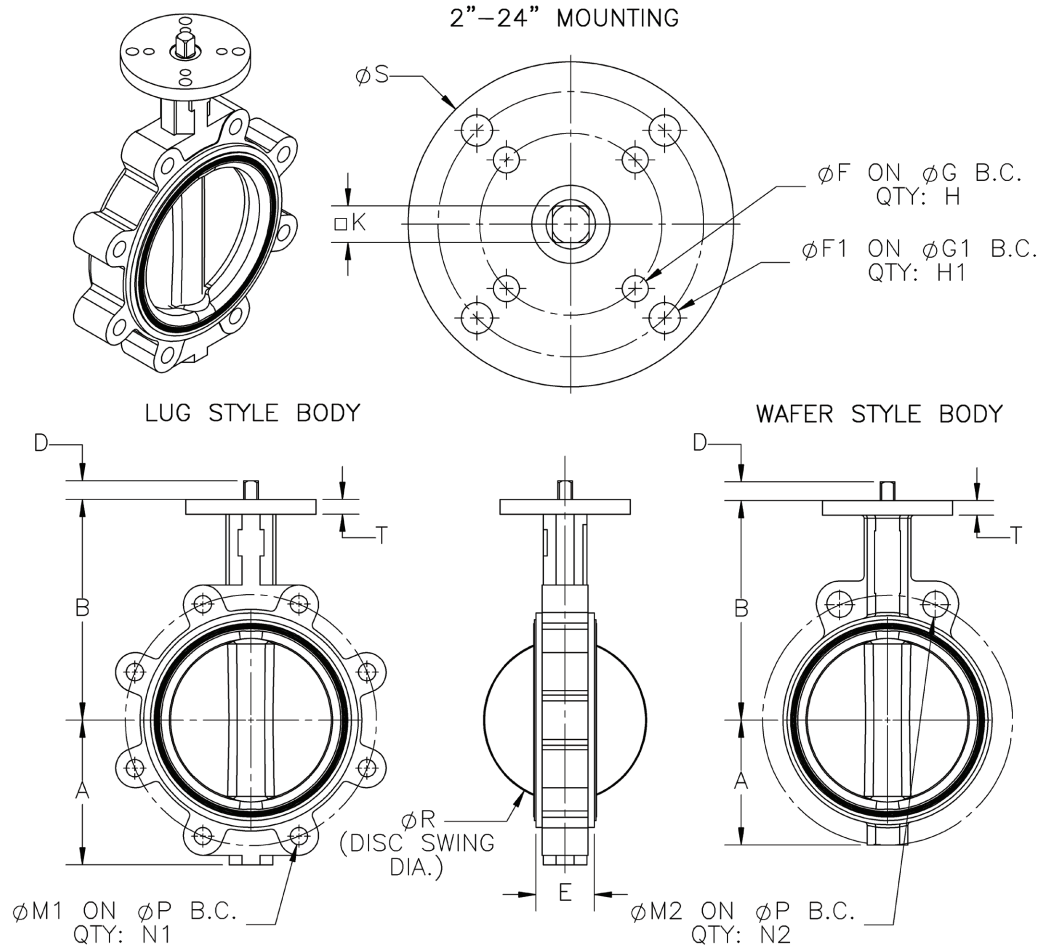
| ITEM | DESCRIPTION              | MATERIAL                    | QTY. |
|------|--------------------------|-----------------------------|------|
| 1    | Body                     | ASTM A395 / A351 CF8M       | 1    |
| 2    | Seat                     | EPDM                        | 1    |
| 3    | Disc                     | A351 CF8M / Nylon Coated DI | 1    |
| 4    | Upper Stem               | 17-4 PH®                    | 1    |
| 5    | Lower Stem               | 17-4 PH®                    | 1    |
| 6    | Bottom Cover Bolt        | A2-70                       | 4    |
| 7    | Bottom Cover Lock Washer | ASTM A276 304               | 4*   |
| 8    | Bottom Cover Flat Washer | ASTM A276 304               | 4*   |
| 9    | Bottom Cover O-Ring      | Buna-N                      | 4*   |
| 10   | Bottom Cover             | ASTM A395 / A351 CF8M       | 1    |
| 11   | Flange Bushing           | Brass                       | 2    |
| 12   | Long Bushing             | Brass                       | 2    |
| 13   | Short Bushing            | PTFE                        | 2    |
| 14   | Packing                  | Buna-N                      | 1    |
| 15   | Gland                    | WCB / ASTM A276 316         | 1    |
| 16   | Gland Bolt               | ASTM A276 304               | 4    |

\*16"-20" valves have quantity 2



# RESILIENT SEATED BUTTERFLY **Series NS**

## Dimensions | 2" - 24"



### ANSI/ASME Class 150

| Size   | A     |       | B     |       | D    | E    | ØF   | ØG          | H | ØF1  | ØG1         | H1 | K     | ØM1       | N1 | ØM2       |            |            | N2        |       |       | ØP        |            |            | ØR    | ØS   | T    | Lug (lbs) | Wafer (lbs) |
|--------|-------|-------|-------|-------|------|------|------|-------------|---|------|-------------|----|-------|-----------|----|-----------|------------|------------|-----------|-------|-------|-----------|------------|------------|-------|------|------|-----------|-------------|
|        | Lug   | Wafer | Lug   | Wafer |      |      |      |             |   |      |             |    |       |           |    | Class 150 | PN 10 (mm) | PN 16 (mm) | Class 150 | PN 10 | PN 16 | Class 150 | PN 10 (mm) | PN 16 (mm) |       |      |      |           |             |
| 2"     | 3.15  | 2.40  | 5.51  | 5.51  | 0.63 | 1.69 | 0.39 | 2.756 (F07) | 4 | -    | -           | -  | 0.354 | 5/8 - 11  | 4  | 0.79      | 19         | 19         | 2         | 2     | 2     | 4.75      | 125        | 125        | 2.07  | 3.54 | 0.51 | 8         | 6           |
| 2-1/2" | 3.50  | 2.68  | 5.91  | 5.91  | 0.63 | 1.81 | 0.39 | 2.756 (F07) | 4 | -    | -           | -  | 0.354 | 5/8 - 11  | 4  | 0.79      | 19         | 19         | 2         | 2     | 2     | 5.50      | 145        | 145        | 2.53  | 3.54 | 0.51 | 9         | 7           |
| 3"     | 3.74  | 2.99  | 6.22  | 6.22  | 0.63 | 1.81 | 0.39 | 2.756 (F07) | 4 | -    | -           | -  | 0.354 | 5/8 - 11  | 4  | 0.79      | 19         | 19         | 2         | 2     | 2     | 6.00      | 160        | 160        | 3.10  | 3.54 | 0.51 | 11        | 8           |
| 4"     | 4.49  | 3.62  | 6.93  | 6.93  | 0.63 | 2.05 | 0.39 | 2.756 (F07) | 4 | -    | -           | -  | 0.433 | 5/8 - 11  | 8  | 0.79      | 19         | 19         | 2         | 2     | 2     | 7.50      | 180        | 180        | 4.09  | 3.54 | 0.55 | 19        | 12          |
| 5"     | 5.00  | 4.21  | 7.48  | 7.48  | 0.71 | 2.20 | 0.39 | 2.756 (F07) | 4 | -    | -           | -  | 0.551 | 3/4 - 10  | 8  | 0.91      | 19         | 19         | 2         | 2     | 2     | 8.50      | 210        | 210        | 4.85  | 3.54 | 0.55 | 25        | 16          |
| 6"     | 5.47  | 4.72  | 8.35  | 8.31  | 0.71 | 2.20 | 0.39 | 2.756 (F07) | 4 | 0.47 | 4.016 (F10) | 4  | 0.551 | 3/4 - 10  | 8  | 0.91      | 23         | 23         | 2         | 2     | 2     | 9.50      | 240        | 240        | 6.13  | 4.92 | 0.55 | 30        | 18          |
| 8"     | 6.85  | 5.94  | 9.29  | 9.25  | 0.71 | 2.36 | 0.47 | 4.016 (F10) | 4 | 0.71 | 5.512 (F14) | 4  | 0.669 | 3/4 - 10  | 8  | 0.91      | 23         | 23         | 2         | 2     | 2     | 11.75     | 295        | 295        | 7.97  | 6.89 | 0.63 | 45        | 31          |
| 10"    | 7.99  | 7.32  | 10.43 | 10.43 | 0.94 | 2.68 | 0.47 | 4.016 (F10) | 4 | 0.71 | 5.512 (F14) | 4  | 0.866 | 7/8 - 9   | 12 | 1.02      | 23         | 28         | 2         | 2     | 2     | 14.25     | 350        | 355        | 9.86  | 6.89 | 0.63 | 69        | 49          |
| 12"    | 9.53  | 8.31  | 12.01 | 12.01 | 0.94 | 3.07 | 0.47 | 4.016 (F10) | 4 | 0.71 | 5.512 (F14) | 4  | 0.866 | 7/8 - 9   | 12 | 1.02      | 23         | 28         | 2         | 2     | 2     | 17.00     | 400        | 410        | 11.87 | 6.89 | 0.71 | 102       | 69          |
| 14"    | 10.51 | 10.63 | 14.49 | 14.49 | 0.94 | 3.07 | 0.47 | 4.016 (F10) | 4 | 0.71 | 5.512 (F14) | 4  | 0.866 | 1 - 8     | 12 | 1.14      | 23         | 28         | 4         | 4     | 4     | 18.75     | 460        | 470        | 13.13 | 6.89 | 0.79 | 128       | 85          |
| 16"    | 13.10 | 13.10 | 15.75 | 15.75 | 1.42 | 4.02 | 0.71 | 5.512 (F14) | 4 | 0.87 | 6.496 (F16) | 4  | 1.063 | 1 - 8     | 16 | 1.14      | 28         | 31         | 4         | 4     | 4     | 21.25     | 515        | 525        | 15.34 | 8.27 | 0.87 | 210       | 139         |
| 18"    | 14.28 | 14.28 | 16.61 | 16.61 | 1.42 | 4.49 | 0.71 | 5.512 (F14) | 4 | 0.87 | 6.496 (F16) | 4  | 1.063 | 1 1/8 - 7 | 16 | 1.26      | 28         | 31         | 4         | 4     | 4     | 22.75     | 565        | 585        | 17.34 | 8.27 | 0.98 | 231       | 163         |
| 20"    | 15.26 | 15.26 | 17.91 | 17.40 | 1.42 | 5.00 | 0.71 | 5.512 (F14) | 4 | 0.87 | 6.496 (F16) | 4  | 1.417 | 1 1/8 - 7 | 20 | 1.26      | 28         | 34         | 4         | 4     | 4     | 25.00     | 620        | 650        | 19.35 | 8.27 | 1.06 | 344       | 231         |
| 24"    | 18.69 | 18.80 | 22.24 | 22.24 | 1.81 | 6.06 | 0.87 | 6.496 (F16) | 4 | -    | -           | -  | 1.417 | 1 1/4 - 7 | 20 | 1.38      | 31         | 37         | 4         | 4     | 4     | 29.50     | 725        | 770        | 23.33 | 8.27 | 1.26 | 485       | 412         |

- Unless otherwise specified, all dimensions are in inches.
- Face-To-Face dimensions (E) are across the body flats (metal-to-metal). Approximately 1/16" of the rubber seat protrudes from each side for flange sealing.
- 2" - 24" Lug valve end connections conform to ANSI B16.5 Class 150, Wafer valve end connections conform to ANSI B16.5 Class 150 and EN1092-2 PN 10/16.

A-T Controls reserves the right to change product designs and technical/dimensional specifications without notice. See website for updates.

# Series NS RESILIENT SEATED BUTTERFLY

## Cv Values and Operating Torques

### NS Series Butterfly Valve **Cv Values** (US-GPM @ 1 Δ P) - Rated Flow Coefficients

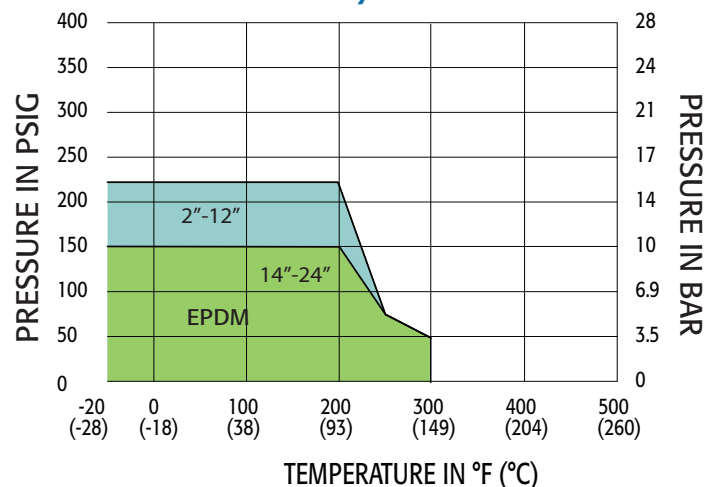
| Valve Size | 10° | 20°   | 30°   | 40°   | 50°   | 60°    | 70°    | 80°    | 90°    |
|------------|-----|-------|-------|-------|-------|--------|--------|--------|--------|
| 2"         | 0.1 | 5     | 12    | 24    | 45    | 64     | 90     | 125    | 135    |
| 2-1/2"     | 1   | 8     | 20    | 37    | 65    | 98     | 144    | 204    | 220    |
| 3"         | 2   | 12    | 22    | 39    | 70    | 116    | 183    | 275    | 302    |
| 4"         | 3   | 17    | 36    | 78    | 139   | 230    | 364    | 546    | 600    |
| 5"         | 5   | 29    | 61    | 133   | 237   | 392    | 620    | 930    | 1,022  |
| 6"         | 8   | 45    | 95    | 205   | 366   | 605    | 958    | 1,437  | 1,579  |
| 8"         | 13  | 89    | 188   | 408   | 727   | 1,202  | 1,903  | 2,854  | 3,136  |
| 10"        | 21  | 151   | 320   | 694   | 1,237 | 2,047  | 3,240  | 4,859  | 5,340  |
| 12"        | 30  | 234   | 495   | 1,072 | 1,911 | 3,162  | 5,005  | 7,507  | 8,250  |
| 14"        | 40  | 338   | 715   | 1,549 | 2,761 | 4,568  | 7,230  | 10,844 | 11,917 |
| 16"        | 50  | 464   | 983   | 2,130 | 3,797 | 6,282  | 9,942  | 14,913 | 16,388 |
| 18"        | 72  | 615   | 1,302 | 2,822 | 5,028 | 8,320  | 13,168 | 19,752 | 21,705 |
| 20"        | 86  | 971   | 1,674 | 3,628 | 6,465 | 10,698 | 16,931 | 25,396 | 27,908 |
| 24"        | 256 | 1,222 | 2,587 | 5,605 | 9,989 | 16,528 | 26,157 | 39,236 | 43,116 |

### Approximate Operating **Torque** (In-lbs)

| SIZE   | 50 PSID | 100 PSID | 150 PSID | 225 PSID |
|--------|---------|----------|----------|----------|
|        | WET     |          |          |          |
| 2"     | 105     | 115      | 126      | 140      |
| 2-1/2" | 112     | 134      | 138      | 154      |
| 3"     | 170     | 176      | 201      | 221      |
| 4"     | 275     | 303      | 345      | 365      |
| 5"     | 433     | 482      | 532      | 556      |
| 6"     | 680     | 754      | 886      | 1,065    |
| 8"     | 1,215   | 1,365    | 1,592    | 1,947    |
| 10"    | 1,903   | 2,204    | 2,532    | 2,920    |
| 12"    | 2,784   | 3,285    | 3,813    | 4,602    |
| 14"    | 3,658   | 4,212    | 4,872    | -        |
| 16"    | 4,516   | 5,914    | 6,855    | -        |
| 18"    | 5,832   | 7,758    | 9,524    | -        |
| 20"    | 7,632   | 10,620   | 13,650   | -        |
| 24"    | 12,340  | 15,340   | 19,870   | -        |



**Pressure vs. Temperature Chart for NS Butterfly Valves 2"-24"**



## Pressure vs. Temperature

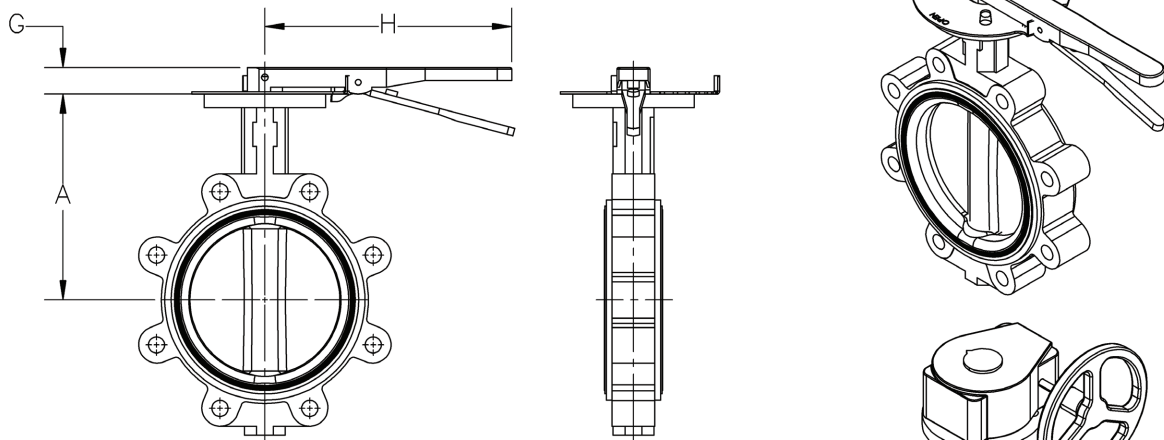
### Seat **Temperature** Ratings

| Seat | Temperature °F | 2" - 12" Pressure (PSIG) | 14" - 24" Pressure (PSIG) |
|------|----------------|--------------------------|---------------------------|
| EPDM | -20°           | 225 PSIG                 | 150 PSIG                  |
|      | 100°           | 225 PSIG                 | 150 PSIG                  |
|      | 200°           | 225 PSIG                 | 150 PSIG                  |
|      | 250°           | 75 PSIG                  | 75 PSIG                   |
|      | 300°           | 50 PSIG                  | 50 PSIG                   |

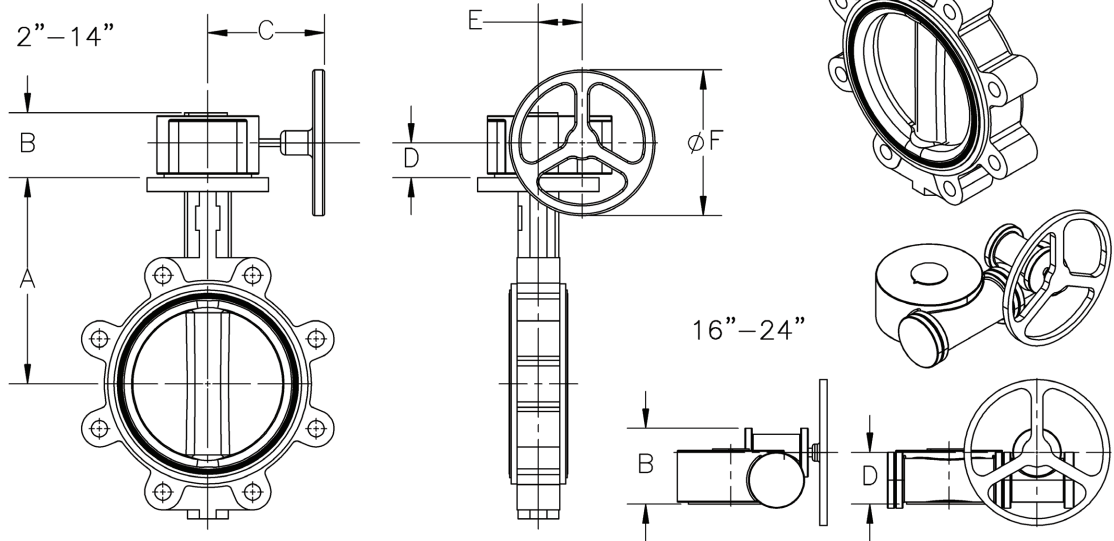


## Handle and Gear Operator Sizing

HANDLE (2"–6" ONLY)



GEAR OPERATOR



| SIZE   | A     |       | GEAR OPERATOR |      |      |      |       | HANDLE |       |
|--------|-------|-------|---------------|------|------|------|-------|--------|-------|
|        | Lug   | Wafer | B             | C    | D    | E    | ØF    | G      | H     |
| 2"     | 5.51  | 5.51  | 2.64          | 4.74 | 1.42 | 1.78 | 6.00  | 1.05   | 10.25 |
| 2-1/2" | 5.91  | 5.91  |               |      |      |      |       |        |       |
| 3"     | 6.22  | 6.22  |               |      |      |      |       |        |       |
| 4"     | 6.93  | 6.93  |               |      |      |      |       |        |       |
| 5"     | 7.48  | 7.48  |               |      |      |      |       |        |       |
| 6"     | 8.35  | 8.31  |               |      |      |      |       |        |       |
| 8"     | 9.29  | 9.25  | 3.27          | 7.09 | 1.81 | 2.48 | 12.00 | -      | -     |
| 10"    | 10.43 | 10.43 |               |      |      |      |       |        |       |
| 12"    | 12.01 | 12.01 |               |      |      |      |       |        |       |
| 14"    | 14.49 | 14.49 |               |      |      |      |       |        |       |
| 16"    | 15.75 | 15.75 |               |      |      |      |       |        |       |
| 18"    | 16.61 | 16.61 |               |      |      |      |       |        |       |
| 20"    | 17.91 | 17.40 | 6.14          | 7.80 | 4.17 | 7.13 | 12.00 | -      | -     |
| 24"    | 22.24 | 22.24 |               |      |      |      |       |        |       |

# Automation Capabilities

## Pneumatic Rack & Pinion Actuators



2R Series Rack & Pinion



S2 Series Stainless Steel Actuators

## Electric Actuators



## TRIAC® Automated Valve Assemblies

- ▶ Pneumatic or Electric
- ▶ Pre-engineered assemblies
- ▶ Pre-sized and pre-priced
- ▶ Double Acting or Spring Return
- ▶ Options
- ▶ Butterfly Valve packages

## APL Limit Switches

- ▶ Aluminum or Stainless Steel housing
- ▶ Weatherproof/explosion proof construction
- ▶ Dome indicator
- ▶ Easy-Set cams
- ▶ Captive bolts
- ▶ Many switch options
- ▶ AS-I systems
- ▶ Can be mounted on manual valves



APL-210N  
CSA Approved, Type 4X

APL-510N  
CSA Approved  
Class I, Div 1 & 2, Groups B, C, D

APL-910N  
Stainless Steel  
Type 4X, IP 67

APL-310N  
CSA Approved,  
Type 4X

See individual brochures for details & options

# How to ORDER

## Part Number Matrix for A-T Controls NSF/ANSI 61 & 372 Certified Valves

### A-T Controls NS Series BALL Valves

| 1 Valve Series                 |   |      |    |
|--------------------------------|---|------|----|
| NS20                           | 2pc. Full Port 1000 psi, NSF 61 & 372 certified               |      |    |
| NS22                           | 2pc. Direct Mount 1000 psi, Full Port, NSF 61 & 372 certified |      |    |
| NS55                           | 3pc. 1000 psi max, Full Port, NSF 61 & 372 certified          |      |    |
| NS90                           | 2pc. Flanged Full Port, NSF 61 & 372 certified                |      |    |
| NSV9                           | 2pc. Flanged Full Port, V-Port, NSF 61 & 372 certified        |      |    |
| NSD9                           | Direct Mount Flanged, NSF 61 & 372 certified                  |      |    |
| 2 End Connection               |   |      |    |
| TH                             | NPT Ends  |      |    |
| SW                             | Socket Weld Ends  |      |    |
| BW                             | Butt Weld Ends  |      |    |
| F1                             | 150# Flanged Ends   |      |    |
| F3                             | 300# Flanged Ends   |      |    |
| TS                             | NPT x Socket Weld   |      |    |
| 3 Valve Size                   |   |      |    |
| 0025                           | 1/4"  | 0300 | 3" |
| 0038                           | 3/8"  | 0400 | 4" |
| 0050                           | 1/2"  | 0500 | 5" |
| 0075                           | 3/4"  | 0600 | 6" |
| 0100                           | 1"  |      |    |
| 0125                           | 1-1/4"  |      |    |
| 0150                           | 1-1/2"  |      |    |
| 0200                           | 2"  |      |    |
| 0250                           | 2-1/2"  |      |    |
| 4 Seat Material                |   |      |    |
| X                              | Reinforced TFE Seats (RTFE)                                   |      |    |
| P                              | Virgin TFE (PTFE)   |      |    |
| 5 Special Designations         |   |      |    |
| X                              | No Specials   |      |    |
| G                              | Gear Operator   |      |    |
| O                              | Oval Handle (available on some)                               |      |    |
| S                              | Spring Return Handle (Direct Mount only)                      |      |    |
| 6 Additional Specials          |   |      |    |
| X                              | No Specials   |      |    |
| 7 Ball Designation (NSV9 only) |   |      |    |
| 1                              | 15° V-Port Ball   |      |    |
| 3                              | 30° V-Port Ball   |      |    |
| 6                              | 60° V-Port Ball   |      |    |
| 9                              | 90° V-Port Ball   |      |    |

**EXAMPLES:**

**NS55-TH-0200-XXX**

Series 55 Full Port Ball Valve with 2" NPT threaded ends, 316SST Body and Trim, 1000 psi WOG, F05 B.C., RTFE Seats/Stem Seal, PTFE Joint Gaskets/Packing. Assembled grease free. Certified for NSF/ANSI 61-2016 and NSF/ANSI 372-2011 for up to 60°C service (UL Certification Mark tag included).

**NSV9-F1-0200-XXX-3**

2" Series NS90 Class 150 Full Port Ball Valve. 316SST Body and Trim, F07 B.C., RTFE Seats/Stem Seal, PTFE Joint Gasket/Packing. Assembled grease free with no stem o-ring. Certified for NSF/ANSI 61-2016 and NSF/ANSI 372-2011 for up to 60°C service (UL Certification Mark tag included). With 30 Deg V-Port.

| HOW TO ORDER MANUAL<br>NS SERIES BALL VALVES |   |    |   |      |   |           |
|--|---|----|---|------|---|-----------|
| 1  | - | 2  | - | 3    | - | 4 5 6 - 7 |
| ↓  |   | ↓  |   | ↓    |   | ↓↓↓ ↓     |
| NS55   | - | TH | - | 0200 | - | XXX       |
| NSV9   | - | F1 | - | 0200 | - | XXX - 3   |

**REPAIR KIT EXAMPLES:**

**NS55-RK-0200-PTFE**

Series NS55 2" Repair Kit containing: (2) PTFE Seats, (1) set of PTFE packing, (1) RTFE Stem Seal, (2) PTFE Joint Gaskets

**NS55-RK-0200-RTFE**

Series NS55 2" Repair Kit containing: (2) RTFE seats, (1) set of PTFE packing, (1) RTFE Stem Seal, (2) PTFE Joint Gaskets

### A-T Controls NS Series BUTTERFLY Valves

| 1 Valve Series         |   |
|------------------------|---|
| NS                     | A-T NSF 61 & 372 / Dead-End Service Butterfly Valve |
| 2 Body Material        |   |
| blank                  | A351 CF8M (No Designation)                          |
| P                      | A395 Ductile Iron (Standard)                        |
| 3 End Connection       |   |
| L1                     | 125/150# Lug  |
| W1                     | 125/150# Wafer                                      |
| 4 Valve Size           |   |
| 0200                   | 2" 1400 14"   |
| 0250                   | 2-1/2" 1600 16"                                     |
| 0300                   | 3" 1800 18"   |
| 0400                   | 4" 2000 20"   |
| 0500                   | 5" 2400 24"   |
| 0600                   | 6"  |
| 0800                   | 8"  |
| 1000                   | 10"   |
| 1200                   | 12"   |
| 5 Seat Material/Style  |   |
| N                      | EPDM (NSF 61 & 372 and Dead-End Service)            |
| 6 Disc Material/Style  |   |
| N                      | Nylon Coated Ductile Iron (NSF 61 & 372)            |
| S                      | A351 CF8M (NSF 61 & 372)                            |
| 7 Stem Bushing         |   |
| R                      | PTFE / Brass  |
| 8 Operator Designation |   |
| X                      | Bare Stem   |
| S                      | Stainless Steel 10 position Handle                  |
| L                      | Locking Handle -10 position (up to 6")              |
| G                      | Gear Operator                                       |
| 9 Stem                 |   |
| A                      | 17-4 PH® Stem                                       |

**EXAMPLE:**

**NS-L1-0400-NSR-XA**

NSF 61 & 372 Approved 4" NS Series RSBFV, Class 125/150 Lug Style, A351 CF8M Body, EPDM Dead-End Service Seat, A351 CF8M Disc, PTFE Stem Bushing, 17-4 PH Square Stem, Bare Stem.

| HOW TO ORDER MANUAL<br>NS SERIES BUTTERFLY VALVES |   |    |   |      |   |     |             |
|---|---|----|---|------|---|-----|-------------|
| 1   | 2 | -  | 3 | -    | 4 | -   | 5 6 7 - 8 9 |
| ↓   | ↓ |    | ↓ |      | ↓ |     | ↓↓↓ ↓ ↓     |
| NS  | - | L1 | - | 0400 | - | NSR | - X A       |





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