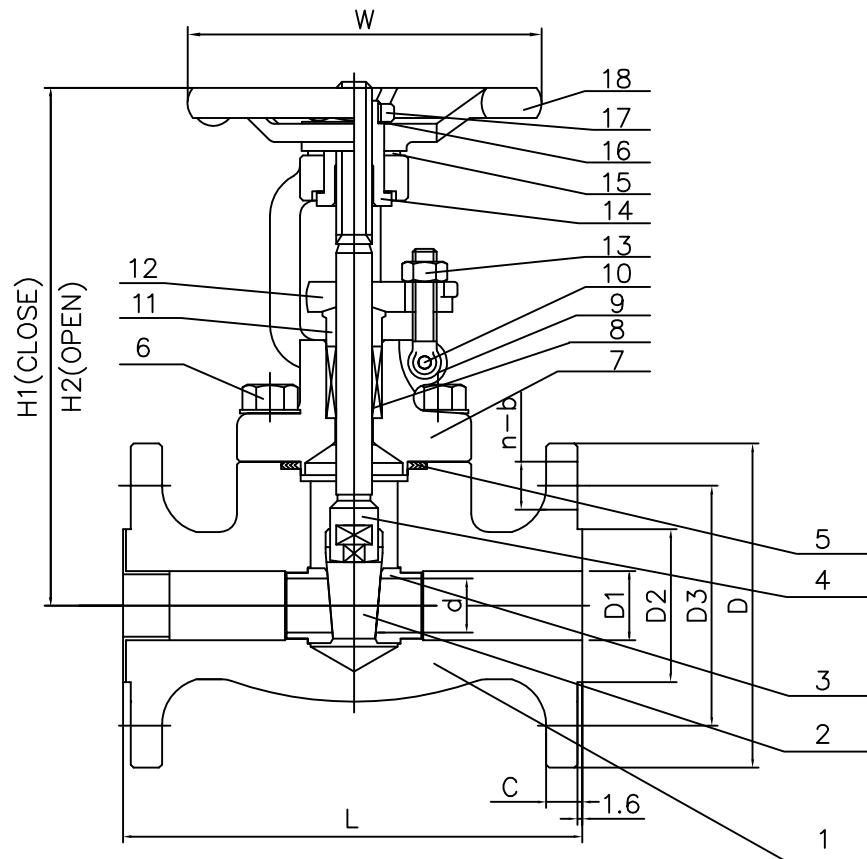


# Wm. E. Williams No. F15F2N Class 150 RF OS&Y BB Gate Valve A105N (API Trim 8) NACE



| ITEM | PART NAME      | QTY  | MATERIAL   |
|------|----------------|------|--|
| 1    | Body           | 1    | A105N  |
| 2    | Disc           | 1    | A276-410   |
| 3    | Seat ring      | 2    | A105N+HF   |
| 4    | Stem           | 1    | A276-410   |
| 5    | Gasket         | 1    | 304+Graphite   |
| 6    | Bonnet Bolt    | 4    | A193-B7M   |
| 7    | Bonnet         | 1    | A105N  |
| 8    | Packing        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 9    | Gland Bolt     | 2    | A276-410   |
| 10   | Gland Bolt Pin | 2    | A276-410   |
| 11   | Packing Flange | 1    | A276-410   |
| 12   | Gland Flange   | 1    | WCB  |
| 13   | Nut            | 2    | A194-2HM   |
| 14   | Stem Nut       | 1    | A276-410   |
| 15   | Washer         | 2    | A276-410   |
| 16   | Nameplate      | 1    | STAINLESS STEEL  |
| 17   | Hand Wheel Nut | 1    | A108-1025  |
| 18   | Hand Wheel     | 1    | A197   |

| SIZE   | L   | H1  | H2  | W    | d   | D1  | D2  | D3     | D     | C    | n-b     |
|--------|-----|-----|-----|------|-----|-----|-----|--------|-------|------|---------|
| 1/2"   | 108 | 170 | 180 | ø100 | ø10 | ø16 | ø35 | ø60.5  | ø89   | 12   | 4-ø15.8 |
| 3/4"   | 117 | 172 | 182 | ø100 | ø13 | ø21 | ø43 | ø70    | ø98.5 | 13   | 4-ø15.8 |
| 1"     | 127 | 206 | 216 | ø125 | ø18 | ø26 | ø51 | ø79.5  | ø108  | 14.5 | 4-ø15.8 |
| 1-1/4" | 140 | 230 | 240 | ø160 | ø22 | ø33 | ø64 | ø89    | ø117  | 16   | 4-ø15.8 |
| 1-1/2" | 165 | 236 | 246 | ø160 | ø29 | ø41 | ø73 | ø98.5  | ø127  | 17.5 | 4-ø15.8 |
| 2"     | 178 | 273 | 283 | ø180 | ø36 | ø51 | ø92 | ø120.5 | ø152  | 19.5 | 4-ø19   |

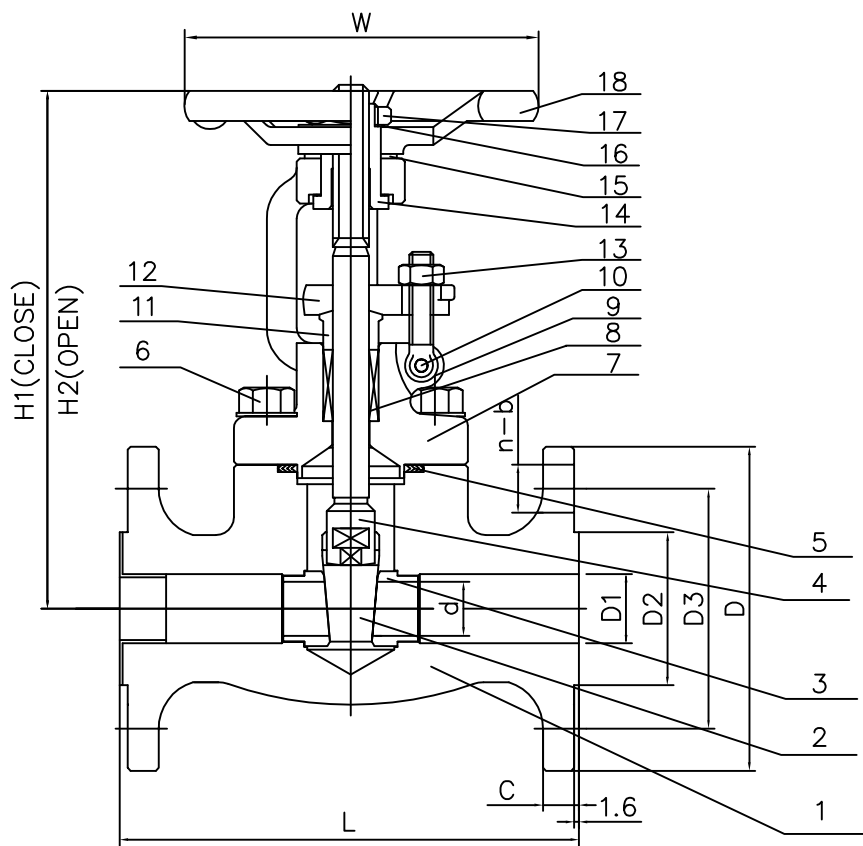
WILLIAM E. VALVE CORPORATION  
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 FAX: 718-729-5106  
 WWW.WILLIAMSVALVE.COM

TITLE: FORGED STEEL BOLTED BONNET GATE VALVE  
 CLASS 150 - API TRIM 8 - INTEGRAL FLANGES

|     |      |             |       |       |       |                |             |                    |         |                   |           |          |           |          |            |        |
|-----|------|-------------|-------|-------|-------|----------------|-------------|--------------------|---------|-------------------|-----------|----------|-----------|----------|------------|--------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: | API 598 | MATERIAL:         | A105N     | UNITS:   | Inch, mm  |          |            |        |
|     |      |             |       |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL              | HYDRO   | 450PSI            | CLASS:    | 150      | DATE:     | 01/01/12 | SCALE:     | N.T.S. |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT               | AIR     | 80PSI             | SIZE:     | 1/2 - 2" | FIG. No.: | F15F-2N  |            |        |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT          | HYDRO   | 315PSI            | DRAWN BY: | F.J.     |           |          |            |        |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR            | 0175    | CHK'D & APR'D BY: | R.P.      | REV:     | 1         | DWG No.: | 50GA120001 |        |

1/1/12 ISSUED FOR PROPOSAL

# Wm. E. Williams No. F17F2N Class 150 RF OS&Y BB Gate Valve A105N (API Trim 8) NACE



| ITEM | PART NAME      | QTY  | MATERIAL   |
|------|----------------|------|--|
| 1    | Body           | 1    | A105N  |
| 2    | Disc           | 1    | A276-410   |
| 3    | Seat ring      | 2    | A105N+HF   |
| 4    | Stem           | 1    | A276-410   |
| 5    | Gasket         | 1    | 304+Graphite   |
| 6    | Bonnet Bolt    | 4    | A193-B7M   |
| 7    | Bonnet         | 1    | A105N  |
| 8    | Packing        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 9    | Gland Bolt     | 2    | A276-410   |
| 10   | Gland Bolt Pin | 2    | A276-410   |
| 11   | Packing Flange | 1    | A276-410   |
| 12   | Gland Flange   | 1    | WCB  |
| 13   | Nut            | 2    | A194-2HM   |
| 14   | Stem Nut       | 1    | A276-410   |
| 15   | Washer         | 2    | A276-410   |
| 16   | Nameplate      | 1    | STAINLESS STEEL  |
| 17   | Hand Wheel Nut | 1    | A108-1025  |
| 18   | Hand Wheel     | 1    | A197   |

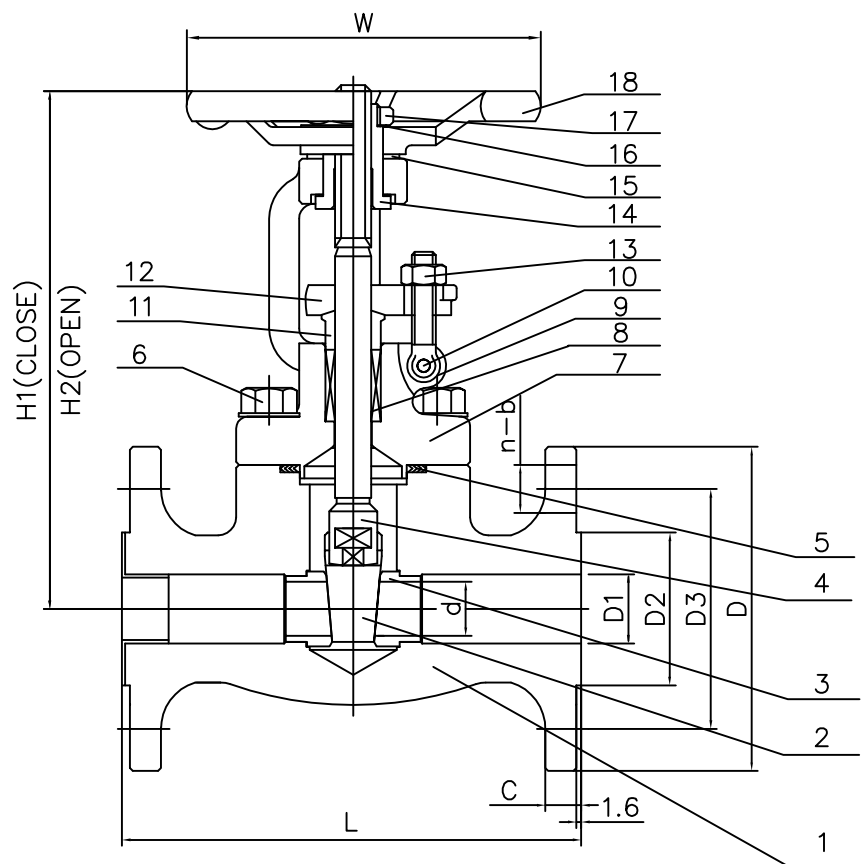
| SIZE   | L   | H1  | H2  | W    | d     | D1    | D2  | D3     | D    | C    | n-b   |
|--------|-----|-----|-----|------|-------|-------|-----|--------|------|------|-------|
| 1/2"   | 108 | 170 | 180 | ø100 | ø13   | ø16   | ø35 | ø60.5  | ø89  | 12   | 4-ø16 |
| 3/4"   | 117 | 172 | 182 | ø100 | ø18   | ø21   | ø43 | ø70    | ø100 | 13   | 4-ø16 |
| 1"     | 127 | 206 | 216 | ø125 | ø24   | ø26.5 | ø51 | ø79.5  | ø110 | 14.5 | 4-ø16 |
| 1-1/4" | 140 | 230 | 240 | ø160 | ø29   | ø35   | ø64 | ø89    | ø115 | 16   | 4-ø16 |
| 1-1/2" | 165 | 236 | 246 | ø160 | ø36.5 | ø41   | ø73 | ø98.5  | ø125 | 17.5 | 4-ø16 |
| 2"     | 178 | 273 | 283 | ø180 | ø49   | ø52.5 | ø92 | ø120.5 | ø150 | 19.5 | 4-ø19 |

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TITLE: FORGED STEEL BOLTED BONNET GATE VALVE  
 CLASS 150 - API TRIM 8 - INTEGRAL FLANGES - FULL PORT

|     |      |             |       |       |       |                |             |                            |                        |                 |                     |
|-----|------|-------------|-------|-------|-------|----------------|-------------|----------------------------|------------------------|-----------------|---------------------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: API 598 | MATERIAL: A105N        | UNITS: Inch, mm |                     |
|     |      |             |       |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL HYDRO 450PSI         | CLASS: 150             | DATE: 01/01/12  | SCALE: N.T.S.       |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT AIR 80PSI             | SIZE: 1/2 - 2"         |                 | FIG. No.: F17F-2N   |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT HYDRO 315PSI     | DRAWN BY: F.J.         |                 |                     |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR 0175               | CHK'D & APR'D BY: R.P. | REV: 1          | DWG No.: 50GA120263 |

# Wm. E. Williams No. F30F2N Class 300 RF OS&Y BB Gate Valve A105N (API Trim 8) NACE



| ITEM | PART NAME      | QTY  | MATERIAL   |
|------|----------------|------|--|
| 1    | Body           | 1    | A105N  |
| 2    | Disc           | 1    | A276-410   |
| 3    | Seat ring      | 2    | A105N+HF   |
| 4    | Stem           | 1    | A276-410   |
| 5    | Gasket         | 1    | 304+Graphite   |
| 6    | Bonnet Bolt    | 4    | A193-B7M   |
| 7    | Bonnet         | 1    | A105N  |
| 8    | Packing        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 9    | Gland Bolt     | 2    | A276-410   |
| 10   | Gland Bolt Pin | 2    | A276-410   |
| 11   | Packing Flange | 1    | A276-410   |
| 12   | Gland Flange   | 1    | WCB  |
| 13   | Nut            | 2    | A194-2HM   |
| 14   | Stem Nut       | 1    | A276-410   |
| 15   | Washer         | 2    | A276-410   |
| 16   | Nameplate      | 1    | Aluminum   |
| 17   | Hand Wheel Nut | 1    | A108-1025  |
| 18   | Hand Wheel     | 1    | A197   |

| SIZE   | L   | H1  | H2  | W    | d   | D1  | D2  | D3     | D    | C    | n-b     |
|--------|-----|-----|-----|------|-----|-----|-----|--------|------|------|---------|
| 1/2"   | 140 | 149 | 163 | ø100 | ø13 | ø16 | ø35 | ø66.6  | ø95  | 14.5 | 4-ø15.8 |
| 3/4"   | 152 | 149 | 166 | ø100 | ø13 | ø22 | ø43 | ø82.5  | ø117 | 16   | 4-ø19   |
| 1"     | 165 | 171 | 190 | ø125 | ø18 | ø27 | ø51 | ø89    | ø124 | 18   | 4-ø19   |
| 1-1/4" | 178 | 195 | 219 | ø160 | ø24 | ø34 | ø63 | ø98.5  | ø133 | 19   | 4-ø19   |
| 1-1/2" | 190 | 212 | 246 | ø160 | ø29 | ø42 | ø73 | ø114.5 | ø156 | 21   | 4-ø22   |
| 2"     | 216 | 240 | 283 | ø180 | ø36 | ø51 | ø92 | ø127   | ø165 | 23   | 8-ø19   |

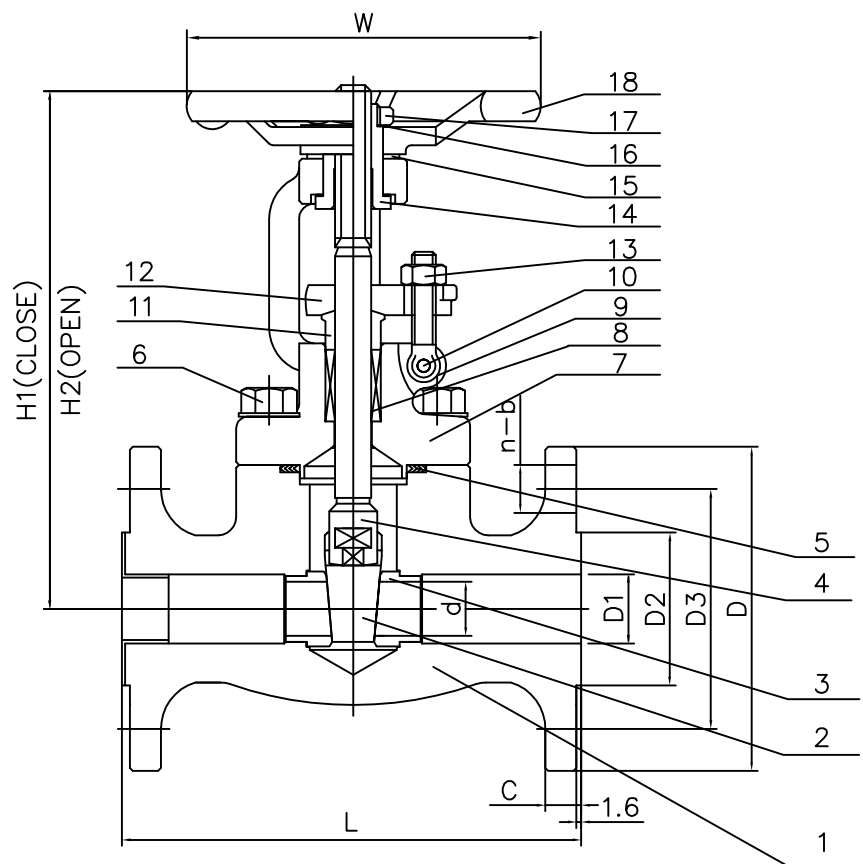
WILLIAM E. VALVE CORPORATION  
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 FAX: 718-729-5106

TITLE: FORGED STEEL BOLTED BONNET GATE VALVE  
 CLASS 300 - API TRIM 8 - INTEGRAL FLANGES

|     |      |             |       |       |       |                |             |                    |         |                   |           |          |           |          |            |        |
|-----|------|-------------|-------|-------|-------|----------------|-------------|--------------------|---------|-------------------|-----------|----------|-----------|----------|------------|--------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: | API 598 | MATERIAL:         | A105N     | UNITS:   | Inch, mm  |          |            |        |
|     |      |             |       |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL              | HYDRO   | 1125PSI           | CLASS:    | 300      | DATE:     | 01/01/12 | SCALE:     | N.T.S. |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT               | AIR     | 80PSI             | SIZE:     | 1/2 - 2" | FIG. No.: | F30F-2N  |            |        |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT          | HYDRO   | 815PSI            | DRAWN BY: | F.J.     |           |          |            |        |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR            | 0175    | CHK'D & APR'D BY: | R.P.      | REV:     | 1         | DWG No.: | 50GA120017 |        |

1/1/12 ISSUED FOR PROPOSAL

# Wm. E. Williams No. F37F2N Class 300 RF OS&Y BB Gate Valve A105N (API Trim 8) NACE



| ITEM | PART NAME      | QTY  | MATERIAL   |
|------|----------------|------|--|
| 1    | Body           | 1    | A105N  |
| 2    | Disc           | 1    | A276-410   |
| 3    | Seat ring      | 2    | A105N+HF   |
| 4    | Stem           | 1    | A276-410   |
| 5    | Gasket         | 1    | 304+Graphite   |
| 6    | Bonnet Bolt    | 4    | A193-B7M   |
| 7    | Bonnet         | 1    | A105N  |
| 8    | Packing        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 9    | Gland Bolt     | 2    | A276-410   |
| 10   | Gland Bolt Pin | 2    | A276-410   |
| 11   | Packing Flange | 1    | A276-410   |
| 12   | Gland Flange   | 1    | WCB  |
| 13   | Nut            | 2    | A194-2HM   |
| 14   | Stem Nut       | 1    | A276-410   |
| 15   | Washer         | 2    | A276-410   |
| 16   | Nameplate      | 1    | Aluminum   |
| 17   | Hand Wheel Nut | 1    | A108-1025  |
| 18   | Hand Wheel     | 1    | A197   |

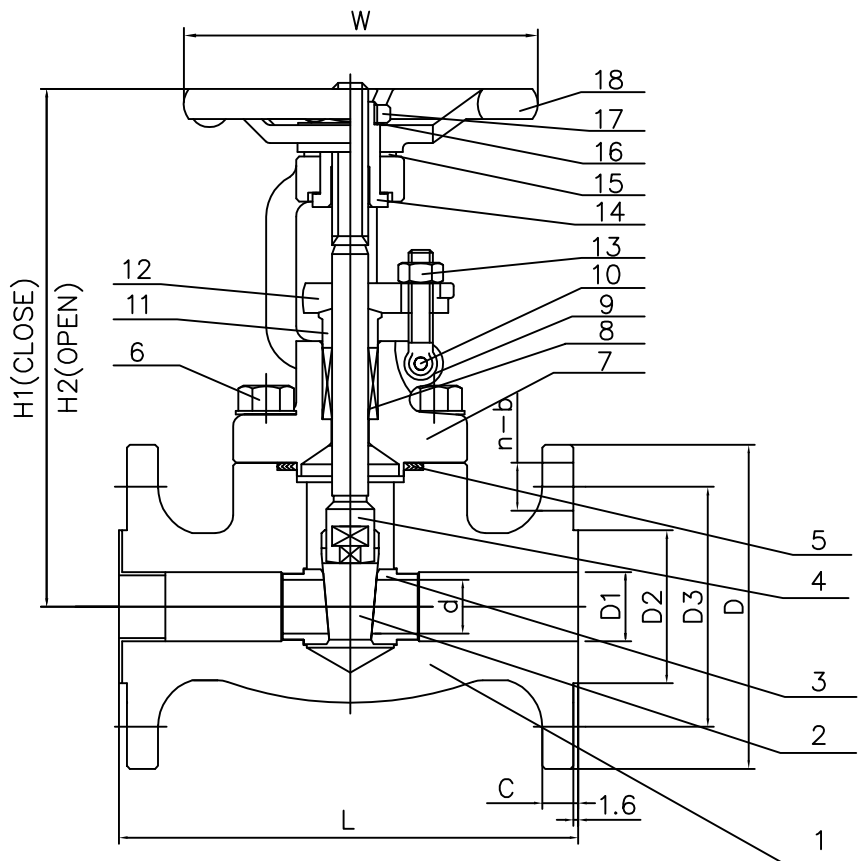
| SIZE   | L   | H1  | H2  | W    | d     | D1    | D2  | D3     | D    | C    | n-b     |
|--------|-----|-----|-----|------|-------|-------|-----|--------|------|------|---------|
| 1/2"   | 140 | 149 | 163 | ø100 | ø13   | ø16   | ø35 | ø66.7  | ø95  | 14.5 | 4-ø16   |
| 3/4"   | 152 | 149 | 166 | ø100 | ø18   | ø21   | ø43 | ø82.5  | ø115 | 16   | 4-ø19   |
| 1"     | 165 | 171 | 190 | ø125 | ø24   | ø27   | ø51 | ø89    | ø125 | 18   | 4-ø19   |
| 1-1/4" | 178 | 195 | 219 | ø160 | ø29   | ø35   | ø63 | ø98.5  | ø135 | 19   | 4-ø19   |
| 1-1/2" | 190 | 212 | 246 | ø160 | ø36.5 | ø41   | ø73 | ø114.5 | ø155 | 21.5 | 4-ø22.5 |
| 2"     | 216 | 240 | 283 | ø180 | ø49   | ø52.5 | ø92 | ø127   | ø165 | 23   | 8-ø19   |



TITLE: FORGED STEEL BOLTED BONNET GATE VALVE  
CLASS 300 - API TRIM 8 - INTEGRAL FLANGES - FULL PORT

|     |      |             |       |       |       |                |             |                    |         |                   |           |          |          |          |            |         |
|-----|------|-------------|-------|-------|-------|----------------|-------------|--------------------|---------|-------------------|-----------|----------|----------|----------|------------|---------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: | API 598 | MATERIAL:         | A105N     | UNITS:   | Inch, mm |          |            |         |
|     |      |             |       |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL              | HYDRO   | 1125PSI           | CLASS:    | 300      | DATE:    | 01/01/12 | SCALE:     | N.T.S.  |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT               | AIR     | 80PSI             | SIZE:     | 1/2 - 2" |          |          | FIG. No.:  | F37F-2N |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT          | HYDRO   | 815PSI            | DRAWN BY: | F.J.     |          |          |            |         |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR            | 0175    | CHK'D & APR'D BY: | R.P.      | REV:     | 1        | DWG No.: | 50GA120264 |         |

# Wm. E. Williams No. F60F2N Class 600 RF OS&Y BB Gate Valve A105N (API Trim 8) NACE



| ITEM | PART NAME      | QTY  | MATERIAL   |
|------|----------------|------|--|
| 1    | Body           | 1    | A105N  |
| 2    | Disc           | 1    | A276-410   |
| 3    | Seat ring      | 2    | A105N+HF   |
| 4    | Stem           | 1    | A276-410   |
| 5    | Gasket         | 1    | 304+Graphite   |
| 6    | Bonnet Bolt    | 4    | A193-B7M   |
| 7    | Bonnet         | 1    | A105N  |
| 8    | Packing        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 9    | Gland Bolt     | 2    | A276-410   |
| 10   | Gland Bolt Pin | 2    | A276-410   |
| 11   | Packing Flange | 1    | A276-410   |
| 12   | Gland Flange   | 1    | WCB  |
| 13   | Nut            | 2    | A194-2HM   |
| 14   | Stem Nut       | 1    | A276-410   |
| 15   | Washer         | 2    | A276-410   |
| 16   | Nameplate      | 1    | Aluminum   |
| 17   | Hand Wheel Nut | 1    | A108-1025  |
| 18   | Hand Wheel     | 1    | A197   |

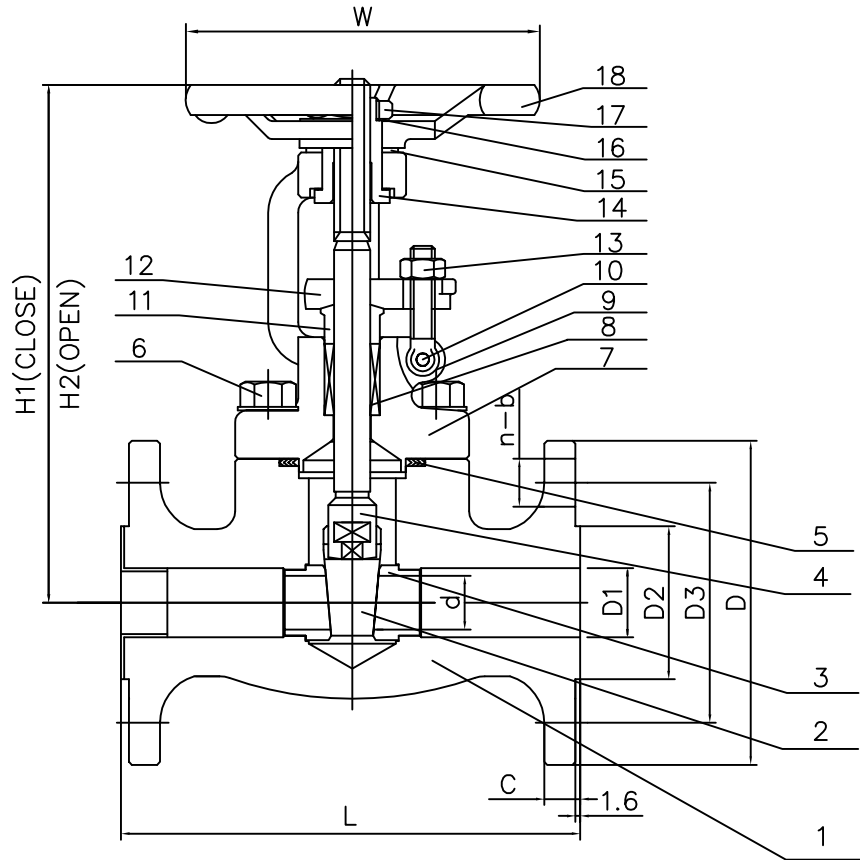
| SIZE   | L   | H1  | H2  | W    | d     | D1    | D2    | D3     | D    | C    | n-b     |
|--------|-----|-----|-----|------|-------|-------|-------|--------|------|------|---------|
| 1/2"   | 165 | 149 | 166 | Ø100 | Ø13   | Ø16   | Ø35   | Ø67    | Ø95  | 21.5 | 4-Ø16   |
| 3/4"   | 190 | 149 | 169 | Ø100 | Ø18   | Ø21   | Ø43   | Ø83    | Ø115 | 23   | 4-Ø19   |
| 1"     | 216 | 171 | 193 | Ø125 | Ø24   | Ø26.5 | Ø51   | Ø89    | Ø125 | 24.5 | 4-Ø19   |
| 1-1/4" | 229 | 195 | 230 | Ø160 | Ø29   | Ø35   | Ø63.5 | Ø98.5  | Ø135 | 28   | 4-Ø19   |
| 1-1/2" | 241 | 212 | 246 | Ø160 | Ø36.5 | Ø41   | Ø73   | Ø114.5 | Ø155 | 29.5 | 4-Ø22.5 |
| 2"     | 292 | 240 | 283 | Ø180 | Ø49   | Ø52.5 | Ø92   | Ø127   | Ø165 | 32   | 8-Ø19   |

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TITLE: FORGED STEEL BOLTED BONNET GATE VALVE  
 CLASS 600 - API TRIM 8 - INTEGRAL FLANGES

|     |      |             |       |       |       |                |             |                            |                        |                 |                |               |
|-----|------|-------------|-------|-------|-------|----------------|-------------|----------------------------|------------------------|-----------------|----------------|---------------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: API 598 | MATERIAL: A105N        | UNITS: Inch, mm |                |               |
|     |      |             |       |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL HYDRO                | 2250PSI                | CLASS: 600      | DATE: 01/01/12 | SCALE: N.T.S. |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT AIR                   | 80PSI                  | SIZE: 1/2 - 2"  | FIG. No.:      | F60F-2N       |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT HYDRO            | 1630PSI                | DRAWN BY: F.J.  |                |               |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR 0175               | CHK'D & APR'D BY: R.P. | REV: 1          | DWG No.:       | 50GA120033    |

# Wm. E. Williams No. F67F2N Class 600 RF OS&Y BB Gate Valve A105N (API Trim 8) NACE



| ITEM | PART NAME      | QTY  | MATERIAL   |
|------|----------------|------|--|
| 1    | Body           | 1    | A105N  |
| 2    | Disc           | 1    | A276-410   |
| 3    | Seat ring      | 2    | A105N+HF   |
| 4    | Stem           | 1    | A276-410   |
| 5    | Gasket         | 1    | 304+Graphite   |
| 6    | Bonnet Bolt    | 4    | A193-B7M   |
| 7    | Bonnet         | 1    | A105N  |
| 8    | Packing        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 9    | Gland Bolt     | 2    | A276-410   |
| 10   | Gland Bolt Pin | 2    | A276-410   |
| 11   | Packing Flange | 1    | A276-410   |
| 12   | Gland Flange   | 1    | WCB  |
| 13   | Nut            | 2    | A194-2HM   |
| 14   | Stem Nut       | 1    | A276-410   |
| 15   | Washer         | 2    | A276-410   |
| 16   | Nameplate      | 1    | Aluminum   |
| 17   | Hand Wheel Nut | 1    | A108-1025  |
| 18   | Hand Wheel     | 1    | A197   |

| SIZE   | L   | H1  | H2  | W    | d     | D1    | D2    | D3     | D    | C    | n-b     |
|--------|-----|-----|-----|------|-------|-------|-------|--------|------|------|---------|
| 1/2"   | 165 | 149 | 166 | ø100 | ø13   | ø16   | ø35   | ø67    | ø95  | 21.5 | 4-ø16   |
| 3/4"   | 190 | 149 | 169 | ø100 | ø18   | ø21   | ø43   | ø83    | ø115 | 23   | 4-ø19   |
| 1"     | 216 | 171 | 193 | ø125 | ø24   | ø26.5 | ø51   | ø89    | ø125 | 24.5 | 4-ø19   |
| 1-1/4" | 229 | 195 | 230 | ø160 | ø29   | ø35   | ø63.5 | ø98.5  | ø135 | 28   | 4-ø19   |
| 1-1/2" | 241 | 212 | 246 | ø160 | ø36.5 | ø41   | ø73   | ø114.5 | ø155 | 29.5 | 4-ø22.5 |
| 2"     | 292 | 240 | 283 | ø180 | ø49   | ø52.5 | ø92   | ø127   | ø165 | 32   | 8-ø19   |

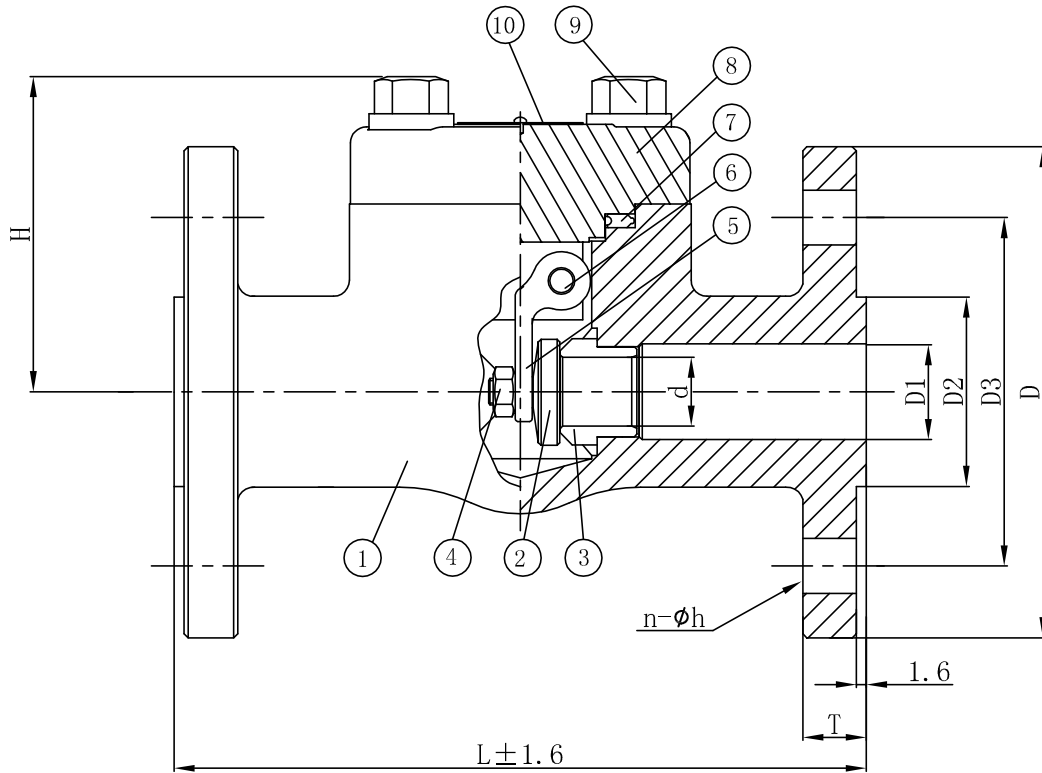
WILLIAM E. WILLIAMS VALVE CORPORATION  
 38-52 REVIEW AVENUE LONG ISLAND CITY, NY 11101  
 TEL: 718-392-1660 FAX: 718-729-5106

TITLE: FORGED STEEL BOLTED BONNET GATE VALVE  
 CLASS 600 - API TRIM 8 - INTEGRAL FLANGES - FULL PORT

|     |      |             |       |       |       |                |             |                    |         |                   |           |          |           |          |            |        |
|-----|------|-------------|-------|-------|-------|----------------|-------------|--------------------|---------|-------------------|-----------|----------|-----------|----------|------------|--------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: | API 598 | MATERIAL:         | A105N     | UNITS:   | Inch, mm  |          |            |        |
|     |      |             |       |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL              | HYDRO   | 2250PSI           | CLASS:    | 600      | DATE:     | 01/01/12 | SCALE:     | N.T.S. |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT               | AIR     | 80PSI             | SIZE:     | 1/2 - 2" | FIG. No.: | F67F-2N  |            |        |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT          | HYDRO   | 1630PSI           | DRAWN BY: | F.J.     |           |          |            |        |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR            | 0175    | CHK'D & APR'D BY: | R.P.      | REV:     | 1         | DWG No.: | 50GA120265 |        |

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# Wm. E. Williams No. F151F2N Class 150 RF Swing Check Valve A105N (API Trim 8) NACE



| PART NO. | PART NAME  | MATERIAL        | QTY |
|----------|------------|-----------------|-----|
| 1        | BODY       | A105N           | 1   |
| 2        | DISC       | A105N           | 1   |
| 3        | SEAT RING  | A276 410 + HF   | 1   |
| 4        | NUT        | A194 2HM        | 1   |
| 5        | ARM        | 410             | 1   |
| 6        | DOWEL      | A276 410        | 1   |
| 7        | GASKET     | 304+Graphite    | 1   |
| 8        | COVER      | A105N           | 1   |
| 9        | COVER BOLT | A193 B7M        | 4   |
| 10       | NAMEPLATE  | STAINLESS STEEL | 1   |

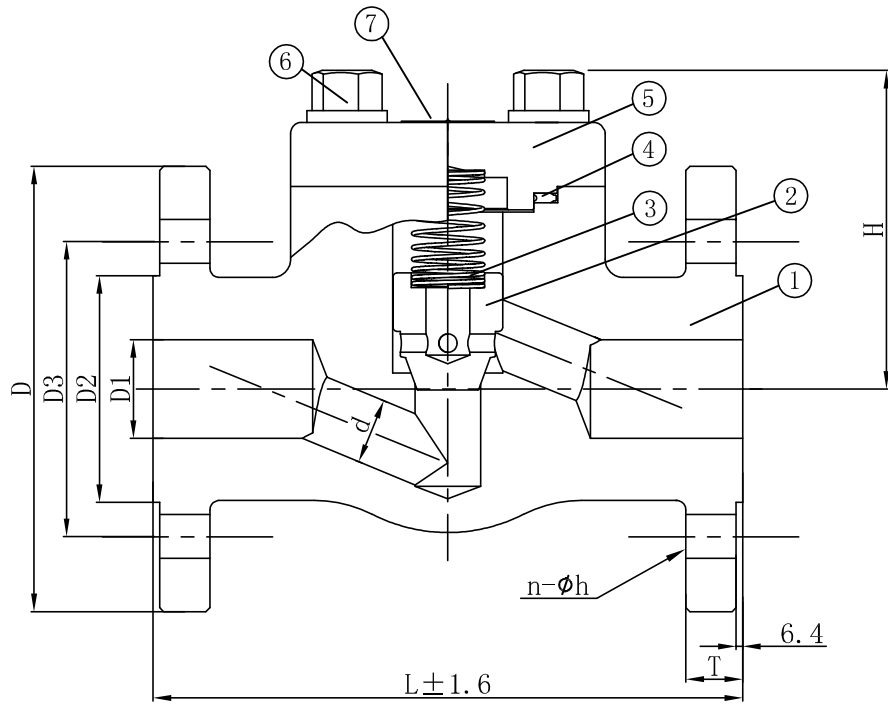
| VALVE SIZE |        | L   | d  | D1 | D2   | D3    | D   | T    | H   | n-φh  |
|------------|--------|-----|----|----|------|-------|-----|------|-----|-------|
| DN         | IN     |     |    |    |      |       |     |      |     |       |
| 15         | 1/2"   | 108 | 10 | 15 | 35   | 60.5  | 89  | 11.5 | 62  | 4-φ16 |
| 20         | 3/4"   | 117 | 13 | 20 | 43   | 70    | 98  | 13   | 63  | 4-φ16 |
| 25         | 1"     | 127 | 18 | 25 | 51   | 79.5  | 108 | 14.5 | 78  | 4-φ16 |
| 32         | 1 1/4" | 140 | 22 | 32 | 63.5 | 89    | 118 | 16   | 82  | 4-φ16 |
| 40         | 1 1/2" | 165 | 29 | 40 | 73   | 98.5  | 127 | 17.5 | 102 | 4-φ16 |
| 50         | 2"     | 203 | 36 | 50 | 92   | 120.5 | 152 | 19.5 | 120 | 4-φ20 |

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TITLE: FORGED STEEL BOLTED COVER  
 RF SWING CHECK VALVE - CLASS 150 - API TRIM 8

|     |        |                     |       |       |                |             |                            |                        |                     |
|-----|--------|---------------------|-------|-------|----------------|-------------|----------------------------|------------------------|---------------------|
|     |        |                     |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: API 598 | MATERIAL: A105N        | UNITS: Inch, mm     |
|     |        |                     |       |       | DIM.OF FLANGE  | ANSI B16.5  | SHELL HYDRO 450PSI         | CLASS: 150             | DATE: 01/01/12      |
|     |        |                     |       |       | FACE TO FACE   | ANSI B16.10 | SEAT AIR 80PSI             | SIZE: 1/2 - 2"         | SCALE: N.T.S.       |
|     |        |                     |       |       | WALL THICKNESS | BS1868      | BACK SEAT HYDRO 315PSI     | DRAWN BY: F.J.         | FIG. No.: F151F-2N  |
| Δ   | 1/1/12 | ISSUED FOR PROPOSAL |       |       | DESIGNED       | API 602     | NACE MR 0175               | CHK'D & APR'D BY: R.P. | REV: 1              |
| NO. | DATE   | DESCRIPTION         | PRP'D | REV'D | APP'D          |             |                            |                        | DWG No.: 50SC120013 |

# Wm. E. Williams No. F151LF2N Class 150 BB RF Lift Check Valve A105N (API Trim 8) NACE



| PART NO. | PART NAME   | MATERIAL        | QTY |
|----------|-------------|-----------------|-----|
| 1        | BODY        | A105N + HF      | 1   |
| 2        | PISTON      | A276-420        | 1   |
| 3        | SPRING      | A276-410        | 1   |
| 4        | GASKET      | 304+Graphite    | 1   |
| 5        | BONNET      | A105N           | 1   |
| 6        | BONNET BOLT | A193 B7M        | 4   |
| 7        | NAMEPLATE   | STAINLESS STEEL | 1   |

| VALVE SIZE |        | L   | d  | D1 | D2   | D3    | D   | T    | H   | n-φh  |
|------------|--------|-----|----|----|------|-------|-----|------|-----|-------|
| DN         | IN     |     |    |    |      |       |     |      |     |       |
| 15         | 1/2"   | 108 | 10 | 15 | 35   | 60.5  | 89  | 11.5 | 62  | 4-φ16 |
| 20         | 3/4"   | 117 | 13 | 20 | 43   | 70    | 98  | 13   | 63  | 4-φ16 |
| 25         | 1"     | 127 | 18 | 25 | 51   | 79.5  | 108 | 14.5 | 78  | 4-φ16 |
| 32         | 1 1/4" | 140 | 22 | 32 | 63.5 | 89    | 118 | 16   | 82  | 4-φ16 |
| 40         | 1 1/2" | 165 | 29 | 40 | 73   | 98.5  | 127 | 17.5 | 102 | 4-φ16 |
| 50         | 2"     | 203 | 36 | 50 | 92   | 120.5 | 152 | 19.5 | 120 | 4-φ20 |

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TITLE: FORGED STEEL BOLTED BONNET  
 RF LIFT CHECK VALVE - CLASS 150 - API TRIM 8

|     |      |             |       |       |       |                |             |                    |         |                   |           |          |           |          |            |           |
|-----|------|-------------|-------|-------|-------|----------------|-------------|--------------------|---------|-------------------|-----------|----------|-----------|----------|------------|-----------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: | API 598 | MATERIAL:         | A105N     | UNITS:   | Inch, mm  |          |            |           |
|     |      |             |       |       |       | DIM.OF FLANGE  | ANSI B16.5  | SHELL              | HYDRO   | 450PSI            | CLASS:    | 150      | DATE:     | 01/01/12 | SCALE:     | N.T.S.    |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT               | AIR     | 80PSI             | SIZE:     | 1/2 - 2" | FIG. No.: |          |            |           |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT          | HYDRO   | 315PSI            | DRAWN BY: | F.J.     |           |          |            | F151LF-2N |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR            | 0175    | CHK'D & APR'D BY: | R.P.      | REV:     | 1         | DWG No.: | 50LC120009 |           |

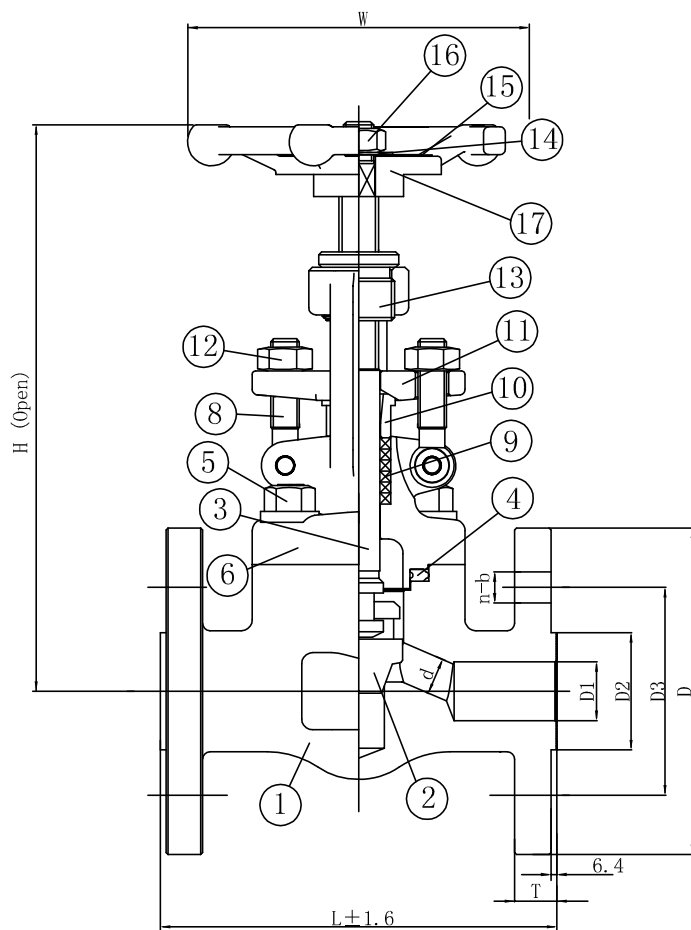
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# Wm. E. Williams No. F152F2N Class 150 RF OS&Y Globe Valve A105N (API Trim 8) NACE

| VALVE SIZE |        | L   | d   | D1  | D2  | D3     | D     | T    | n-b   | H   | W   |
|------------|--------|-----|-----|-----|-----|--------|-------|------|-------|-----|-----|
| DN         | IN     |     |     |     |     |        |       |      |       |     |     |
| 15         | 1/2"   | 108 | ∅10 | ∅16 | ∅35 | ∅60.5  | ∅89   | 12   | 4-∅16 | 166 | 100 |
| 20         | 3/4"   | 117 | ∅13 | ∅21 | ∅43 | ∅70    | ∅98.5 | 13   | 4-∅16 | 175 | 100 |
| 25         | 1"     | 127 | ∅18 | ∅26 | ∅51 | ∅79.5  | ∅108  | 14.5 | 4-∅16 | 206 | 125 |
| 32         | 1-1/4" | 140 | ∅22 | ∅33 | ∅64 | ∅89    | ∅117  | 16   | 4-∅16 | 228 | 160 |
| 40         | 1-1/2" | 165 | ∅29 | ∅41 | ∅73 | ∅98.5  | ∅127  | 17.5 | 4-∅16 | 262 | 160 |
| 50         | 2"     | 203 | ∅36 | ∅51 | ∅92 | ∅120.5 | ∅152  | 19.5 | 4-∅20 | 300 | 180 |

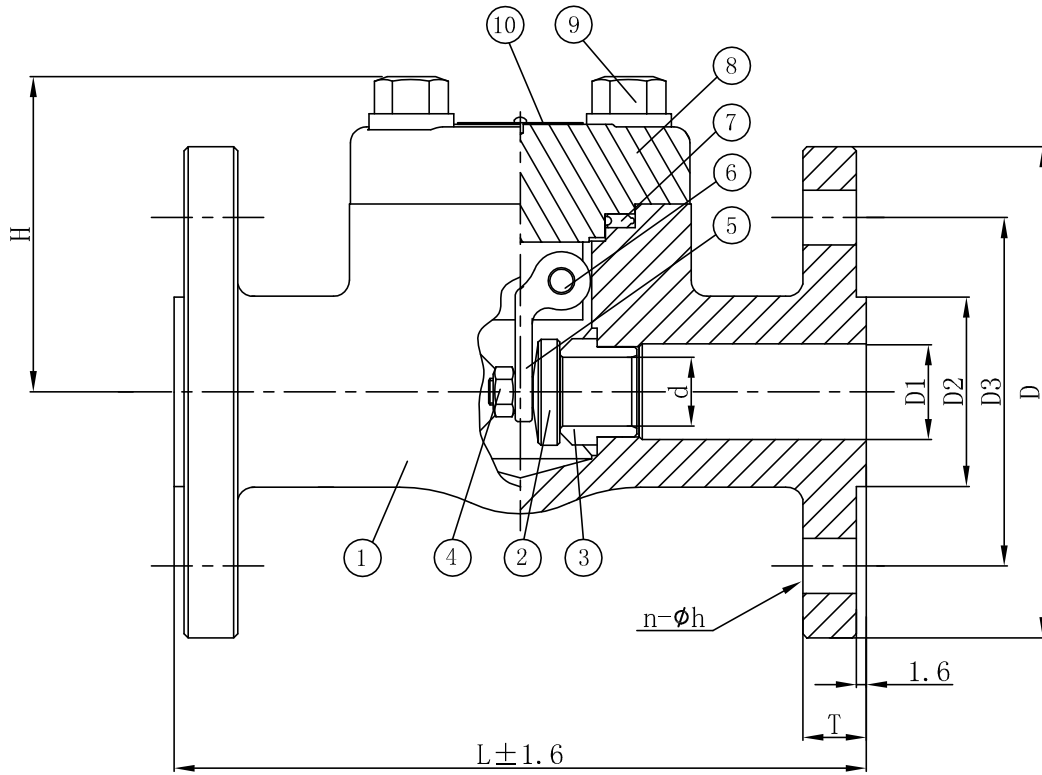
| Item | Part Name      | Qty  | Material   |
|------|----------------|------|--|
| 1    | BODY           | 1    | A105N + HF   |
| 2    | DISC           | 1    | A276 420   |
| 3    | STEM           | 1    | A276 410   |
| 4    | GASKET         | 1    | 304+Graphite   |
| 5    | BONNET BOLT    | 4    | A193 B7M   |
| 6    | BONNET         | 1    | A105N  |
| 7    | PACKING        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 8    | GLAND BOLT     | 2    | A276 410   |
| 9    | GLAND BOLT PIN | 2    | A276 410   |
| 10   | PACKING FLANGE | 1    | A276 420   |
| 11   | GLAND FLANGE   | 1    | WCB  |
| 12   | NUT            | 2    | A194 2HM   |
| 13   | STEM NUT       | 1    | A276 410   |
| 14   | WASHER         | 2    | A276 410   |
| 15   | NAME PLATE     | 1    | STAINLESS STEEL  |
| 16   | HAND WHEEL NUT | 1    | A108 1020  |
| 17   | HAND WHEEL     | 1    | A197   |



TITLE: FORGED STEEL BOLTED BONNET GLOBE VALVE  
CLASS 150 - API TRIM 8 - INTEGRAL FLANGES

|     |      |             |       |       |       |                |             |                            |                        |                 |                     |
|-----|------|-------------|-------|-------|-------|----------------|-------------|----------------------------|------------------------|-----------------|---------------------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: API 598 | MATERIAL: A105N        | UNITS: Inch, mm |                     |
|     |      |             |       |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL HYDRO 450PSI         | CLASS: 150             | DATE: 01/01/12  | SCALE: N.T.S.       |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT AIR 80PSI             | SIZE: 1/2 - 2"         | FIG. No.:       | F152F-2N            |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT HYDRO 315PSI     | DRAWN BY: F.J.         |                 |                     |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR 0175               | CHK'D & APR'D BY: R.P. | REV: 1          | DWG No.: 50GL120005 |

# Wm. E. Williams No. F301F2N Class 300 RF Swing Check Valve A105N (API Trim 8) NACE



| PART NO. | PART NAME  | MATERIAL        | QTY |
|----------|------------|-----------------|-----|
| 1        | BODY       | A105N           | 1   |
| 2        | DISC       | A105N           | 1   |
| 3        | SEAT RING  | A276 410 + HF   | 1   |
| 4        | NUT        | A194 2HM        | 1   |
| 5        | ARM        | 410             | 1   |
| 6        | DOWEL      | A276 410        | 1   |
| 7        | GASKET     | 304+Graphite    | 1   |
| 8        | COVER      | A105N           | 1   |
| 9        | COVER BOLT | A193 B7M        | 4   |
| 10       | NAMEPLATE  | STAINLESS STEEL | 1   |

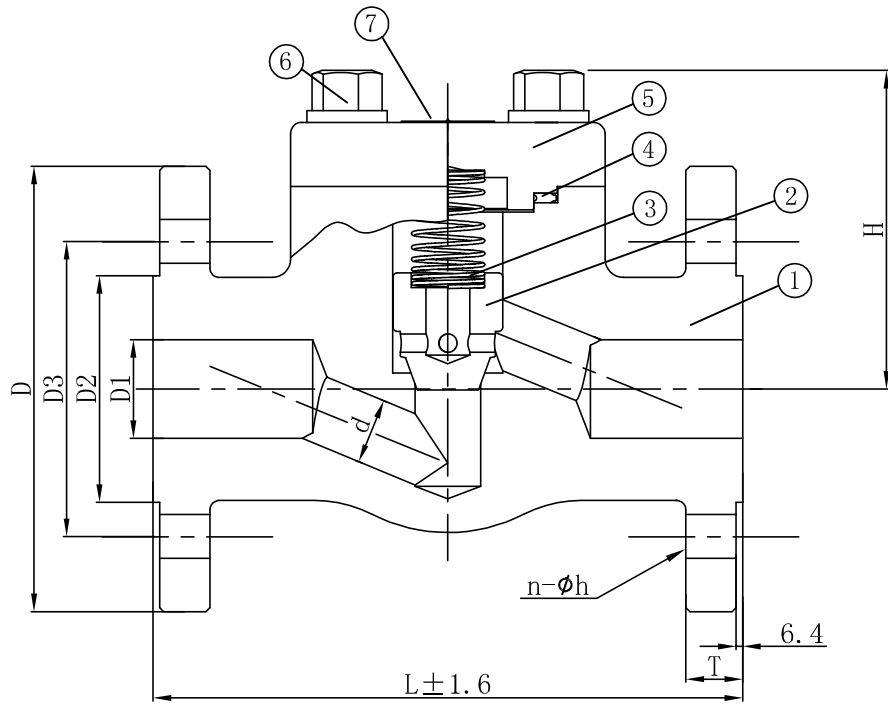
| VALVE SIZE |        | L   | d  | D1 | D2   | D3    | D   | T    | H   | n-φh  |
|------------|--------|-----|----|----|------|-------|-----|------|-----|-------|
| DN         | IN     |     |    |    |      |       |     |      |     |       |
| 15         | 1/2"   | 152 | 13 | 15 | 35   | 66.5  | 95  | 14.5 | 62  | 4-φ16 |
| 20         | 3/4"   | 178 | 13 | 20 | 43   | 82.5  | 118 | 16   | 62  | 4-φ20 |
| 25         | 1"     | 216 | 18 | 25 | 51   | 89    | 124 | 17.5 | 78  | 4-φ20 |
| 32         | 1 1/4" | 229 | 24 | 32 | 63.5 | 98.5  | 133 | 19.5 | 82  | 4-φ20 |
| 40         | 1 1/2" | 241 | 29 | 40 | 73   | 114.5 | 156 | 21   | 102 | 4-φ22 |
| 50         | 2"     | 267 | 36 | 50 | 92   | 127   | 165 | 22.5 | 120 | 8-φ20 |

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TITLE: FORGED STEEL BOLTED COVER  
 RF SWING CHECK VALVE - CLASS 300 - API TRIM 8

|     |      |             |       |       |                |             |                            |                 |                        |
|-----|------|-------------|-------|-------|----------------|-------------|----------------------------|-----------------|------------------------|
|     |      |             |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: API 598 | MATERIAL: A105N | UNITS: Inch, mm        |
|     |      |             |       |       | DIM.OF FLANGE  | ANSI B16.5  | SHELL HYDRO 1125           | CLASS: 300      | DATE: 01/01/12         |
|     |      |             |       |       | FACE TO FACE   | ANSI B16.10 | SEAT AIR 80PSI             | SIZE: 1/2 - 2"  | SCALE: N.T.S.          |
|     |      |             |       |       | WALL THICKNESS | BS1868      | BACK SEAT HYDRO 815PSI     | DRAWN BY: F.J.  | FIG. No.: F301F-2N     |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D          | DESIGNED    | API 602                    | NACE MR 0175    | CHK'D & APR'D BY: R.P. |
|     |      |             |       |       |                |             |                            | REV: 1          | DWG No.: 50SC120029    |

# Wm. E. Williams No. F301LF2N Class 300 BB RF Lift Check Valve A105N (API Trim 8) NACE



| PART NO. | PART NAME   | MATERIAL        | QTY |
|----------|-------------|-----------------|-----|
| 1        | BODY        | A105N + HF      | 1   |
| 2        | PISTON      | A276-420        | 1   |
| 3        | SPRING      | A276-410        | 1   |
| 4        | GASKET      | 304+Graphite    | 1   |
| 5        | BONNET      | A105N           | 1   |
| 6        | BONNET BOLT | A193 B7M        | 4   |
| 7        | NAMEPLATE   | STAINLESS STEEL | 1   |

| VALVE SIZE |        | L   | d  | D1 | D2   | D3    | D   | T    | H   | n-φh  |
|------------|--------|-----|----|----|------|-------|-----|------|-----|-------|
| DN         | IN     |     |    |    |      |       |     |      |     |       |
| 15         | 1/2"   | 152 | 13 | 15 | 35   | 66.5  | 95  | 14.5 | 62  | 4-φ16 |
| 20         | 3/4"   | 178 | 13 | 20 | 43   | 82.5  | 118 | 16   | 62  | 4-φ20 |
| 25         | 1"     | 203 | 18 | 25 | 51   | 89    | 124 | 17.5 | 78  | 4-φ20 |
| 32         | 1 1/4" | 216 | 24 | 32 | 63.5 | 98.5  | 133 | 19.5 | 82  | 4-φ20 |
| 40         | 1 1/2" | 229 | 29 | 40 | 73   | 114.5 | 156 | 21   | 102 | 4-φ22 |
| 50         | 2"     | 267 | 36 | 50 | 92   | 127   | 165 | 22.5 | 120 | 8-φ20 |

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TITLE: FORGED STEEL BOLTED BONNET  
 RF LIFT CHECK VALVE - CLASS 300 - API TRIM 8

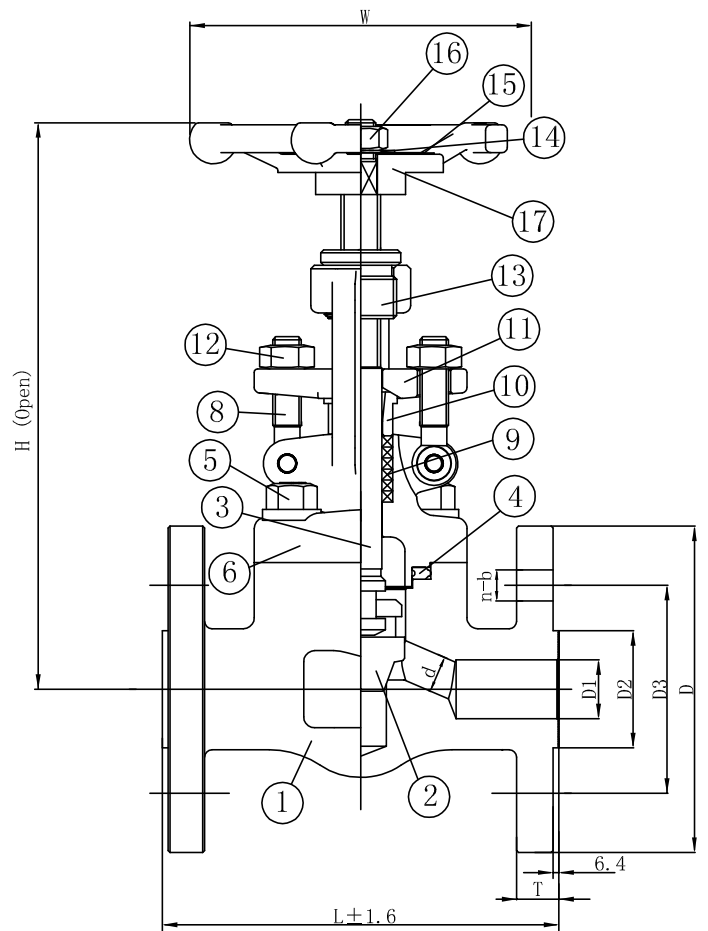
|     |      |             |       |       |                |             |                            |                 |                        |               |                     |
|-----|------|-------------|-------|-------|----------------|-------------|----------------------------|-----------------|------------------------|---------------|---------------------|
|     |      |             |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: API 598 | MATERIAL: A105N | UNITS: Inch, mm        |               |                     |
|     |      |             |       |       | DIM.OF FLANGE  | ANSI B16.5  | SHELL HYDRO 1125           | CLASS: 300      | DATE: 01/01/12         | SCALE: N.T.S. |                     |
|     |      |             |       |       | FACE TO FACE   | ANSI B16.10 | SEAT AIR 80PSI             | SIZE: 1/2 - 2"  | FIG. No.:              | F301LF-2N     |                     |
|     |      |             |       |       | WALL THICKNESS | BS1868      | BACK SEAT HYDRO 815PSI     | DRAWN BY: F.J.  |                        |               |                     |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D          | DESIGNED    | API 602                    | NACE MR 0175    | CHK'D & APR'D BY: R.P. | REV: 1        | DWG No.: 50LC120025 |

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# Wm. E. Williams No. F302F2N Class 300 RF OS&Y Globe Valve A105N (API Trim 8) NACE

| VALVE SIZE |        | L   | d   | D1  | D2    | D3    | D    | T    | n-b   | H   | W   |
|------------|--------|-----|-----|-----|-------|-------|------|------|-------|-----|-----|
| DN         | IN     |     |     |     |       |       |      |      |       |     |     |
| 15         | 1/2"   | 152 | ∅10 | ∅16 | ∅35   | ∅67   | ∅95  | 15   | 4-∅16 | 166 | 100 |
| 20         | 3/4"   | 178 | ∅13 | ∅21 | ∅43   | ∅83   | ∅115 | 16   | 4-∅19 | 175 | 100 |
| 25         | 1"     | 203 | ∅18 | ∅27 | ∅51   | ∅89   | ∅125 | 18   | 4-∅19 | 206 | 125 |
| 32         | 1-1/4" | 216 | ∅18 | ∅32 | ∅63.5 | ∅98.5 | ∅133 | 19.5 | 4-∅20 | 228 | 160 |
| 40         | 1-1/2" | 229 | ∅29 | ∅41 | ∅73   | ∅114  | ∅155 | 21   | 4-∅22 | 262 | 160 |
| 50         | 2"     | 267 | ∅35 | ∅53 | ∅92   | ∅127  | ∅165 | 23   | 8-∅20 | 300 | 180 |

| Item | Part Name      | Qty  | Material   |
|------|----------------|------|--|
| 1    | BODY           | 1    | A105N + HF   |
| 2    | DISC           | 1    | A276 420   |
| 3    | STEM           | 1    | A276 410   |
| 4    | GASKET         | 1    | 304+Graphite   |
| 5    | BONNET BOLT    | 4    | A193 B7M   |
| 6    | BONNET         | 1    | A105N  |
| 7    | PACKING        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 8    | GLAND BOLT     | 2    | A276 410   |
| 9    | GLAND BOLT PIN | 2    | A276 410   |
| 10   | PACKING FLANGE | 1    | A276 420   |
| 11   | GLAND FLANGE   | 1    | WCB  |
| 12   | NUT            | 2    | A194 2HM   |
| 13   | STEM NUT       | 1    | A276 410   |
| 14   | WASHER         | 2    | A276 410   |
| 15   | NAME PLATE     | 1    | STAINLESS STEEL  |
| 16   | HAND WHEEL NUT | 1    | A108 1020  |
| 17   | HAND WHEEL     | 1    | A197   |



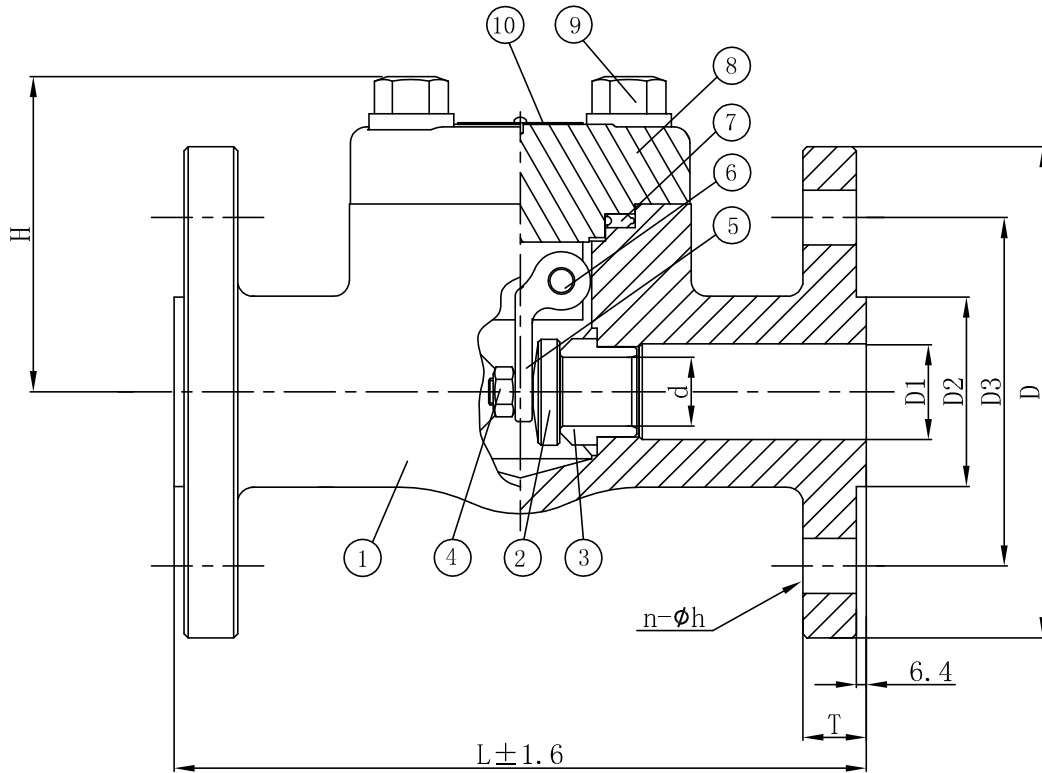
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 38-52 REVIEW AVENUE, LONG ISLAND CITY, NY 11101  
 TEL: 718-392-1660, FAX: 718-729-5106

TITLE: FORGED STEEL BOLTED BONNET RF GLOBE VALVE - CLASS 300 - API TRIM 8

|     |      |                |       |             |                            |          |                 |                |                        |                            |
|-----|------|----------------|-------|-------------|----------------------------|----------|-----------------|----------------|------------------------|----------------------------|
|     |      | MARKING SYSTEM |       | MSS-SP-25   | INSPECTION & TEST: API 598 |          | MATERIAL: A105N |                | UNITS: Inch, mm        |                            |
|     |      | DIM. OF FLANGE |       | ANSI B16.5  | SHELL                      | HYDRO    | 1125PSI         | CLASS: 300     | DATE: 01/01/12         | SCALE: N.T.S.              |
|     |      | FACE TO FACE   |       | ANSI B16.10 | SEAT                       | AIR      | 80PSI           | SIZE: 1/2 - 2" | FIG. No.: F302F-2N     |                            |
|     |      | WALL THICKNESS |       | BS1868      | BACK SEAT                  | HYDRO    | 815PSI          | DRAWN BY: F.J. |                        |                            |
| NO. | DATE | DESCRIPTION    | PRP'D | REV'D       | APP'D                      | DESIGNED | API 602         | NACE MR 0175   | CHK'D & APR'D BY: R.P. | REV: 1 DWG No.: 50GL120021 |

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# Wm. E. Williams No. F601F2N Class 600 RF Swing Check Valve A105N (API Trim 8) NACE



| PART NO. | PART NAME  | MATERIAL        | QTY |
|----------|------------|-----------------|-----|
| 1        | BODY       | A105N           | 1   |
| 2        | DISC       | A105N           | 1   |
| 3        | SEAT RING  | A276 410 + HF   | 1   |
| 4        | NUT        | A194 2HM        | 1   |
| 5        | ARM        | 410             | 1   |
| 6        | DOWEL      | A276 410        | 1   |
| 7        | GASKET     | 304+Graphite    | 1   |
| 8        | COVER      | A105N           | 1   |
| 9        | COVER BOLT | A193 B7M        | 4   |
| 10       | NAMEPLATE  | STAINLESS STEEL | 1   |

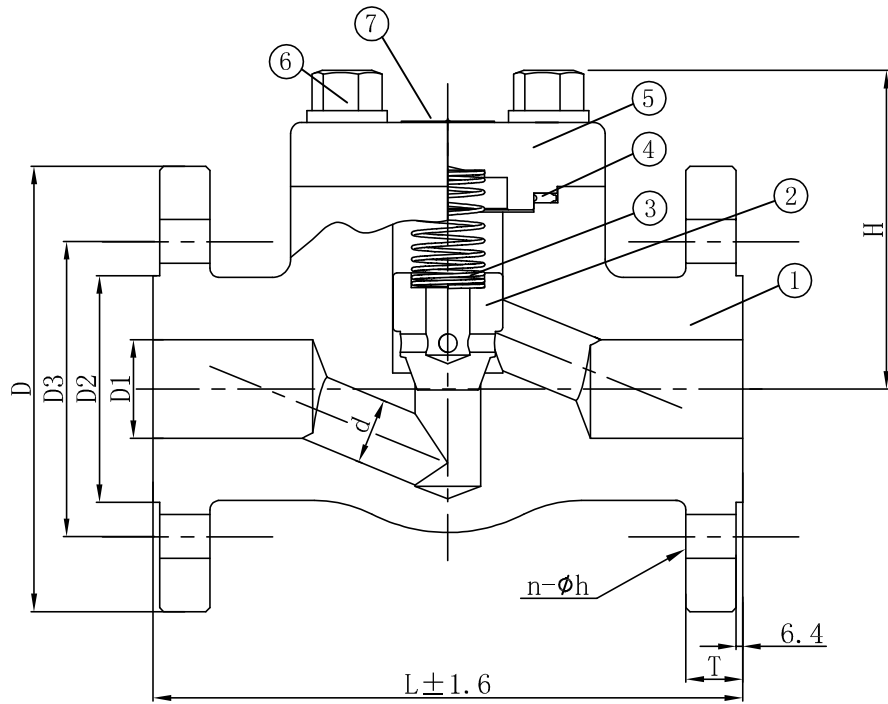
| VALVE SIZE |        | L   | d    | D1 | D2   | D3    | D   | T  | H   | n-φh  |
|------------|--------|-----|------|----|------|-------|-----|----|-----|-------|
| DN         | IN     |     |      |    |      |       |     |    |     |       |
| 15         | 1/2"   | 165 | 13   | 15 | 35   | 66.5  | 95  | 15 | 62  | 4-φ16 |
| 20         | 3/4"   | 190 | 18   | 20 | 43   | 82.5  | 118 | 16 | 62  | 4-φ20 |
| 25         | 1"     | 216 | 24   | 25 | 51   | 89    | 124 | 18 | 78  | 4-φ20 |
| 32         | 1 1/4" | 229 | 29   | 32 | 63.5 | 98.5  | 133 | 21 | 82  | 4-φ20 |
| 40         | 1 1/2" | 241 | 36.5 | 40 | 73   | 114.5 | 156 | 23 | 102 | 4-φ22 |
| 50         | 2"     | 292 | 49   | 50 | 92   | 127   | 165 | 26 | 120 | 8-φ20 |

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 FAX: 718-729-5166

TITLE: FORGED STEEL BOLTED COVER  
 RF SWING CHECK VALVE - CLASS 600 - API TRIM 8

|     |      |             |       |       |                |             |                            |                 |                        |
|-----|------|-------------|-------|-------|----------------|-------------|----------------------------|-----------------|------------------------|
|     |      |             |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: API 598 | MATERIAL: A105N | UNITS: Inch, mm        |
|     |      |             |       |       | DIM.OF FLANGE  | ANSI B16.5  | SHELL HYDRO 2250PSI        | CLASS: 600      | DATE: 01/01/12         |
|     |      |             |       |       | FACE TO FACE   | ANSI B16.10 | SEAT AIR 80PSI             | SIZE: 1/2 - 2"  | SCALE: N.T.S.          |
|     |      |             |       |       | WALL THICKNESS | BS1868      | BACK SEAT HYDRO 1630PSI    | DRAWN BY: F.J.  | FIG. No.: F601F-2N     |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D          | DESIGNED    | API 602                    | NACE MR 0175    | CHK'D & APR'D BY: R.P. |
|     |      |             |       |       |                |             |                            | REV: 1          | DWG No.: 50SC120045    |

# Wm. E. Williams No. F601LF2N Class 600 BB RF Lift Check Valve A105N (API Trim 8) NACE



| PART NO. | PART NAME   | MATERIAL        | QTY |
|----------|-------------|-----------------|-----|
| 1        | BODY        | A105N + HF      | 1   |
| 2        | PISTON      | A276-420        | 1   |
| 3        | SPRING      | A276-410        | 1   |
| 4        | GASKET      | 304+Graphite    | 1   |
| 5        | BONNET      | A105N           | 1   |
| 6        | BONNET BOLT | A193 B7M        | 4   |
| 7        | NAMEPLATE   | STAINLESS STEEL | 1   |

| VALVE SIZE |        | L   | d    | D1 | D2   | D3    | D   | T  | H   | n-φh  |
|------------|--------|-----|------|----|------|-------|-----|----|-----|-------|
| DN         | IN     |     |      |    |      |       |     |    |     |       |
| 15         | 1/2"   | 165 | 13   | 15 | 35   | 66.5  | 95  | 15 | 62  | 4-φ16 |
| 20         | 3/4"   | 190 | 18   | 20 | 43   | 82.5  | 118 | 16 | 62  | 4-φ20 |
| 25         | 1"     | 216 | 24   | 25 | 51   | 89    | 124 | 18 | 78  | 4-φ20 |
| 32         | 1 1/4" | 229 | 29   | 32 | 63.5 | 98.5  | 133 | 21 | 82  | 4-φ20 |
| 40         | 1 1/2" | 241 | 36.5 | 40 | 73   | 114.5 | 156 | 23 | 102 | 4-φ22 |
| 50         | 2"     | 292 | 49   | 50 | 92   | 127   | 165 | 26 | 120 | 8-φ20 |

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TITLE: FORGED STEEL BOLTED BONNET  
 RF LIFT CHECK VALVE - CLASS 600 - API TRIM 8

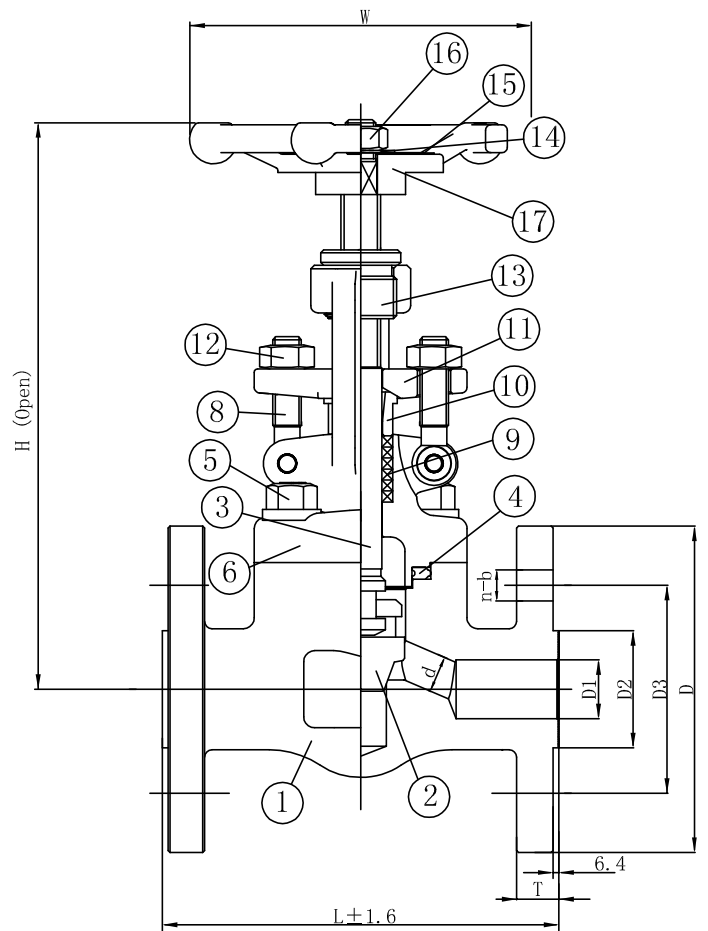
|     |      |             |       |       |                |             |                    |              |                   |           |          |           |           |            |        |
|-----|------|-------------|-------|-------|----------------|-------------|--------------------|--------------|-------------------|-----------|----------|-----------|-----------|------------|--------|
|     |      |             |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: | API 598      | MATERIAL:         | A105N     | UNITS:   | Inch, mm  |           |            |        |
|     |      |             |       |       | DIM.OF FLANGE  | ANSI B16.5  | SHELL              | HYDRO        | 2250PSI           | CLASS:    | 600      | DATE:     | 01/01/12  | SCALE:     | N.T.S. |
|     |      |             |       |       | FACE TO FACE   | ANSI B16.10 | SEAT               | AIR          | 80PSI             | SIZE:     | 1/2 - 2" | FIG. No.: | F601LF-2N |            |        |
|     |      |             |       |       | WALL THICKNESS | BS1868      | BACK SEAT          | HYDRO        | 1630PSI           | DRAWN BY: | F.J.     |           |           |            |        |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D          | DESIGNED    | API 602            | NACE MR 0175 | CHK'D & APR'D BY: | R.P.      | REV:     | 1         | DWG No.:  | 50LC120041 |        |

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# Wm. E. Williams No. F602F2N Class 600 RF OS&Y Globe Valve A105N (API Trim 8) NACE

| VALVE SIZE |        | L   | d   | D1  | D2    | D3    | D    | T  | n-b   | H   | W   |
|------------|--------|-----|-----|-----|-------|-------|------|----|-------|-----|-----|
| DN         | IN     |     |     |     |       |       |      |    |       |     |     |
| 15         | 1/2"   | 165 | ∅10 | ∅16 | ∅35   | ∅67   | ∅95  | 15 | 4-∅16 | 190 | 100 |
| 20         | 3/4"   | 190 | ∅13 | ∅21 | ∅43   | ∅83   | ∅115 | 16 | 4-∅20 | 195 | 100 |
| 25         | 1"     | 216 | ∅18 | ∅27 | ∅51   | ∅89   | ∅125 | 18 | 4-∅20 | 230 | 125 |
| 32         | 1-1/4" | 229 | ∅18 | ∅32 | ∅63.5 | ∅98.5 | ∅133 | 21 | 4-∅20 | 245 | 160 |
| 40         | 1-1/2" | 241 | ∅29 | ∅41 | ∅73   | ∅114  | ∅155 | 23 | 4-∅22 | 262 | 160 |
| 50         | 2"     | 292 | ∅35 | ∅53 | ∅92   | ∅127  | ∅165 | 26 | 8-∅20 | 300 | 180 |

| Item | Part Name      | Qty  | Material   |
|------|----------------|------|--|
| 1    | BODY           | 1    | A105N + HF   |
| 2    | DISC           | 1    | A276 420   |
| 3    | STEM           | 1    | A276 410   |
| 4    | GASKET         | 1    | 304+Graphite   |
| 5    | BONNET BOLT    | 4    | A193 B7M   |
| 6    | BONNET         | 1    | A105N  |
| 7    | PACKING        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 8    | GLAND BOLT     | 2    | A276 410   |
| 9    | GLAND BOLT PIN | 2    | A276 410   |
| 10   | PACKING FLANGE | 1    | A276 420   |
| 11   | GLAND FLANGE   | 1    | WCB  |
| 12   | NUT            | 2    | A194 2HM   |
| 13   | STEM NUT       | 1    | A276 410   |
| 14   | WASHER         | 2    | A276 410   |
| 15   | NAME PLATE     | 1    | STAINLESS STEEL  |
| 16   | HAND WHEEL NUT | 1    | A108 1020  |
| 17   | HAND WHEEL     | 1    | A197   |



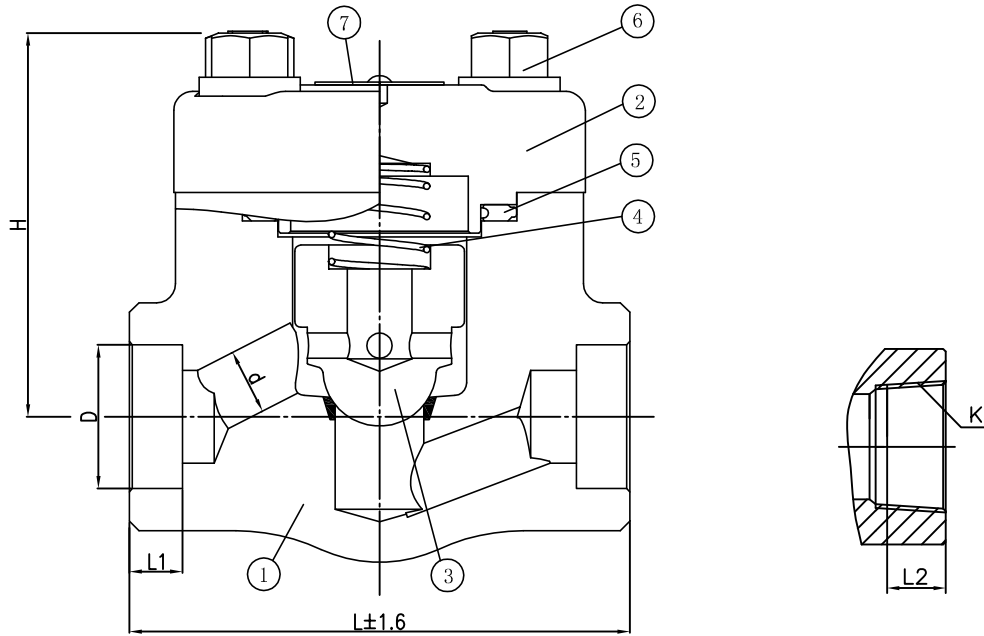
**WILLIAM E. WILLIAMS**  
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38-52 REVIEW AVENUE LONG ISLAND CITY, NY 11101  
TEL: 718-392-1660 FAX: 718-729-5106  
WWW.WILLIAMSVALVE.COM

TITLE: FORGED STEEL BOLTED BONNET RF GLOBE VALVE - CLASS 600 - API TRIM 8

|     |      |             |       |       |       |                |             |                            |                        |                 |                     |
|-----|------|-------------|-------|-------|-------|----------------|-------------|----------------------------|------------------------|-----------------|---------------------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: API 598 | MATERIAL: A105N        | UNITS: Inch, mm |                     |
|     |      |             |       |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL HYDRO 2250PSI        | CLASS: 600             | DATE: 01/01/12  | SCALE: N.T.S.       |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT AIR 80PSI             | SIZE: 1/2 - 2"         | FIG. No.:       | F602F-2N            |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT HYDRO 1630PSI    | DRAWN BY: F.J.         |                 |                     |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR 0175               | CHK'D & APR'D BY: R.P. | REV: 1          | DWG No.: 50GL120037 |

1/1/12 ISSUED FOR PROPOSAL

# Class 800 BB Ball Check Valve A105N (API Trim 8) NACE



## BILL OF MATERIALS

| ITEM | PART NAME   | MATERIAL        | QTY |
|------|-------------|-----------------|-----|
| 1    | BODY        | A105N + HF      | 1   |
| 2    | COVER       | A105N           | 1   |
| 3    | BALL DISC   | A276-420        | 1   |
| 4    | SPRING      | 304 SS          | 1   |
| 5    | GASKET      | F304+Graphite   | 1   |
| 6    | BONNET BOLT | A193-B7M        | 4   |
| 7    | NAME PLATE  | STAINLESS STEEL | 1   |

| VALVE SIZE |        | L   | d   | D     | L1 | H   | K      | L2    |
|------------|--------|-----|-----|-------|----|-----|--------|-------|
| DN         | IN     |     |     |       |    |     |        |       |
| 15         | 1/2"   | 79  | Ø10 | Ø21.8 | 10 | 62  | 1/2"   | Ø15.5 |
| 20         | 3/4"   | 92  | Ø13 | Ø27.2 | 13 | 63  | 3/4"   | Ø16.5 |
| 25         | 1"     | 111 | Ø18 | Ø33.9 | 13 | 78  | 1"     | Ø19.5 |
| 32         | 1 1/4" | 120 | Ø23 | Ø42.7 | 13 | 82  | 1 1/4" | Ø21   |
| 40         | 1 1/2" | 152 | Ø29 | Ø48.8 | 13 | 102 | 1 1/2" | Ø21   |
| 50         | 2"     | 172 | Ø36 | Ø61.2 | 16 | 172 | 2"     | Ø23   |

| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | MARKING SYSTEM | MSS-SP-25 | INSPECTION & TEST: API 598 |
|-----|------|-------------|-------|-------|-------|----------------|-----------|----------------------------|
|     |      |             |       |       |       | FACE TO FACE   | API 602   | SHELL HYDRO 2975PSI        |
|     |      |             |       |       |       | WALL THICKNESS | BS1868    | SEAT AIR 80PSI             |
|     |      |             |       |       |       | DESIGNED       | API 602   | BACK SEAT HYDRO 2175PSI    |
|     |      |             |       |       |       |                |           | NACE MR 0175               |

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FAX: 718-729-5106

TITLE: **FORGED STEEL BOLTED BONNET BALL CHECK VALVE - CLASS 800 - API TRIM 8**

MATERIAL: A105N UNITS: Inch, mm

CLASS: 800 DATE: 01/01/12 SCALE: N.T.S.

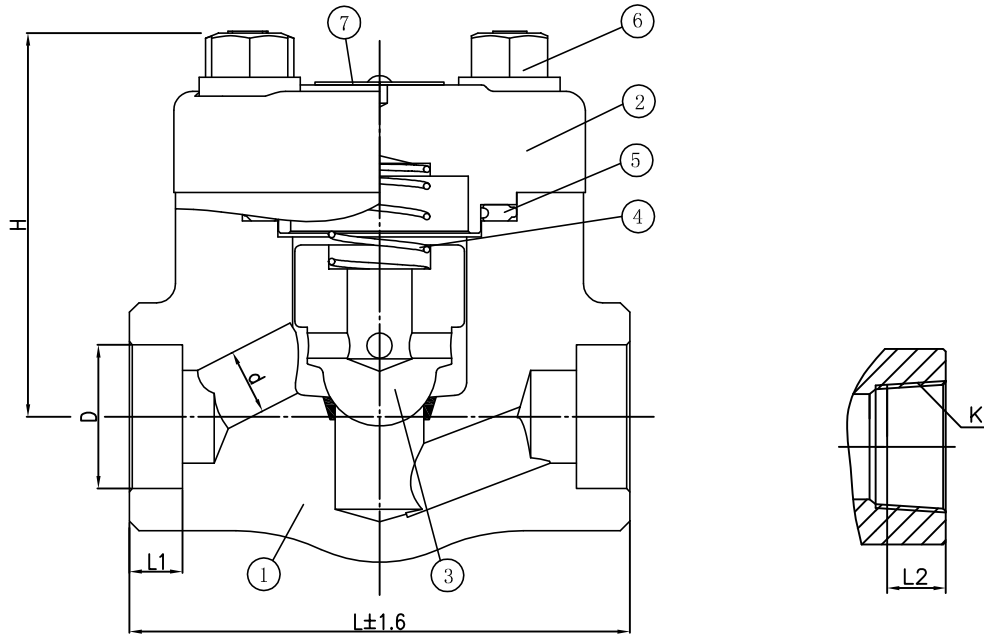
SIZE: 1/2 - 2" FIG. No.: F801BTXS-2N (sw. by thr. ends)  
F801BSW-2N (sw. ends)  
F801BT-2N (thr. ends)

DRAWN BY: F.J.

CHK'D & APR'D BY: R.P. REV: 1 DWG No.: 50BC120271



# Class 800 BB Ball Check Valve A105N (API Trim 8) NACE



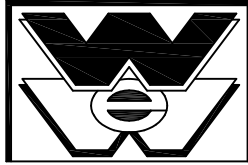
## BILL OF MATERIALS

| ITEM | PART NAME   | MATERIAL        | QTY |
|------|-------------|-----------------|-----|
| 1    | BODY        | A105N + HF      | 1   |
| 2    | COVER       | A105N           | 1   |
| 3    | BALL DISC   | A276-420        | 1   |
| 4    | SPRING      | 304 SS          | 1   |
| 5    | GASKET      | F304+Graphite   | 1   |
| 6    | BONNET BOLT | A193-B7M        | 4   |
| 7    | NAME PLATE  | STAINLESS STEEL | 1   |

| VALVE SIZE |        | L   | d   | D     | L1 | H   | K      | L2    |
|------------|--------|-----|-----|-------|----|-----|--------|-------|
| DN         | IN     |     |     |       |    |     |        |       |
| 15         | 1/2"   | 79  | Ø10 | Ø21.8 | 10 | 62  | 1/2"   | Ø15.5 |
| 20         | 3/4"   | 92  | Ø13 | Ø27.2 | 13 | 63  | 3/4"   | Ø16.5 |
| 25         | 1"     | 111 | Ø18 | Ø33.9 | 13 | 78  | 1"     | Ø19.5 |
| 32         | 1 1/4" | 120 | Ø23 | Ø42.7 | 13 | 82  | 1 1/4" | Ø21   |
| 40         | 1 1/2" | 152 | Ø29 | Ø48.8 | 13 | 102 | 1 1/2" | Ø21   |
| 50         | 2"     | 172 | Ø36 | Ø61.2 | 16 | 172 | 2"     | Ø23   |

| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | MARKING SYSTEM | MSS-SP-25 | INSPECTION & TEST: API 598 |
|-----|------|-------------|-------|-------|-------|----------------|-----------|----------------------------|
|     |      |             |       |       |       | FACE TO FACE   | API 602   | SHELL HYDRO 2975PSI        |
|     |      |             |       |       |       | WALL THICKNESS | BS1868    | SEAT AIR 80PSI             |
|     |      |             |       |       |       | DESIGNED       | API 602   | BACK SEAT HYDRO 2175PSI    |
|     |      |             |       |       |       |                |           | NACE MR 0175               |

**WILLIAM E.**



**WILLIAMS**

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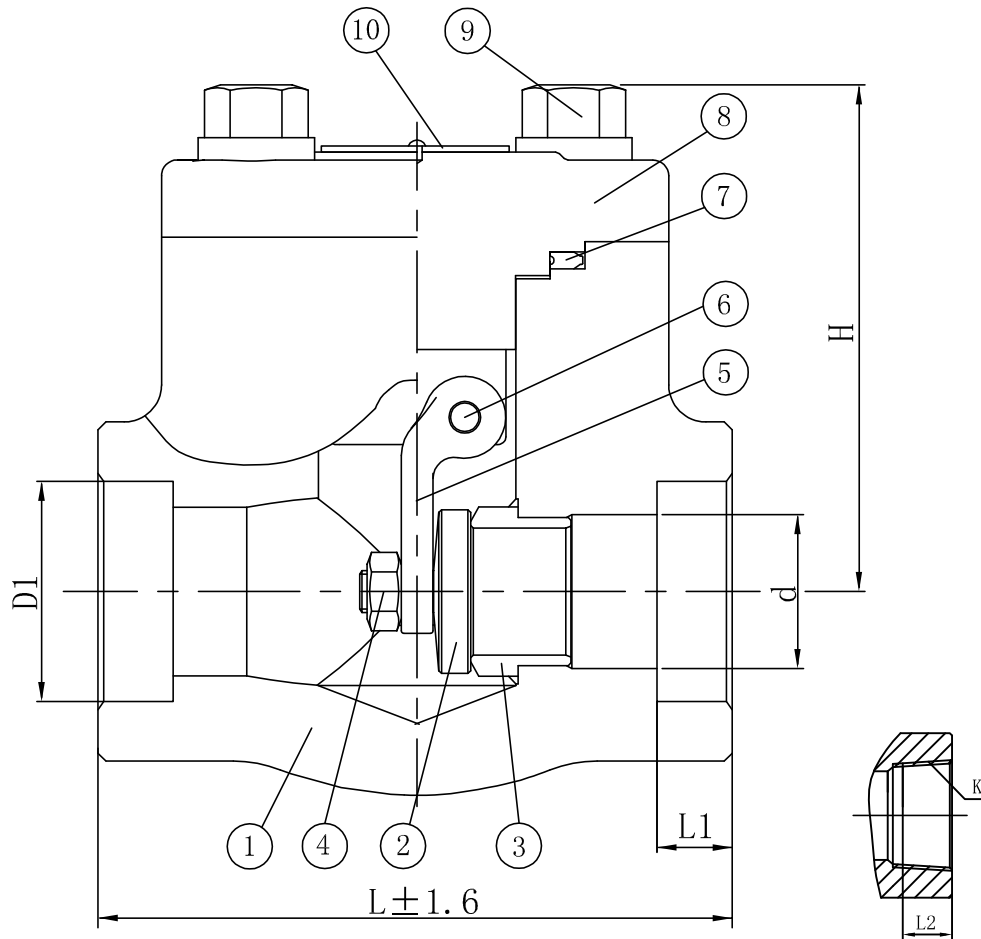
TEL: 718-392-1660  
FAX: 718-729-5106

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**TITLE: FORGED STEEL BOLTED BONNET BALL CHECK VALVE - CLASS 800 - API TRIM 8**

|                        |                |  |
|------------------------|----------------|--|
| MATERIAL: A105N        |                | UNITS: Inch, mm  |
| CLASS: 800             | DATE: 01/01/12 | SCALE: N.T.S.  |
| SIZE: 1/2 - 2"         |                | FIG. No.:  |
| DRAWN BY: F.J.         |                | F801BTXS-2N (sw. by thr. ends)<br>F801BSW-2N (sw. ends)<br>F801BT-2N (thr. ends) |
| CHK'D & APR'D BY: R.P. | REV: 1         | DWG No.: 50BC120271  |

# Class 800 Swing Check Valve A105N (API Trim 8) NACE



| BILL OF MATERIALS |            |                 |      |
|-------------------|------------|-----------------|------|
| NO.               | PART NAME  | MATERIAL        | QTY. |
| 1                 | BODY       | A105N           | 1    |
| 2                 | DISC       | A276 410        | 1    |
| 3                 | SEAT RING  | A276 410+HF     | 1    |
| 4                 | BOLT       | A194-2HM        | 1    |
| 5                 | ROCKER     | A351 CF3        | 1    |
| 6                 | DOWEL      | A276 304        | 1    |
| 7                 | GASKET     | 304+Graphite    | 1    |
| 8                 | COVER      | A105N           | 1    |
| 9                 | COVER BOLT | A193 B7M        | 4    |
| 10                | NAME PLATE | STAINLESS STEEL | 1    |

| Valve Size<br>in | L   | d    | D1   | L1 | K      | L2   | H   |
|------------------|-----|------|------|----|--------|------|-----|
| 1/2"             | 79  | 10   | 21.7 | 10 | 1/2"   | 15.5 | 62  |
| 3/4"             | 92  | 13   | 27.2 | 13 | 3/4"   | 16.5 | 63  |
| 1"               | 111 | 18   | 33.9 | 13 | 1"     | 19.5 | 78  |
| 1 1/4"           | 120 | 24   | 42.7 | 13 | 1 1/4" | 21   | 82  |
| 1 1/2"           | 120 | 29   | 48.8 | 13 | 1 1/2" | 21   | 110 |
| 2"               | 140 | 36.5 | 61.2 | 16 | 2"     | 23   | 120 |

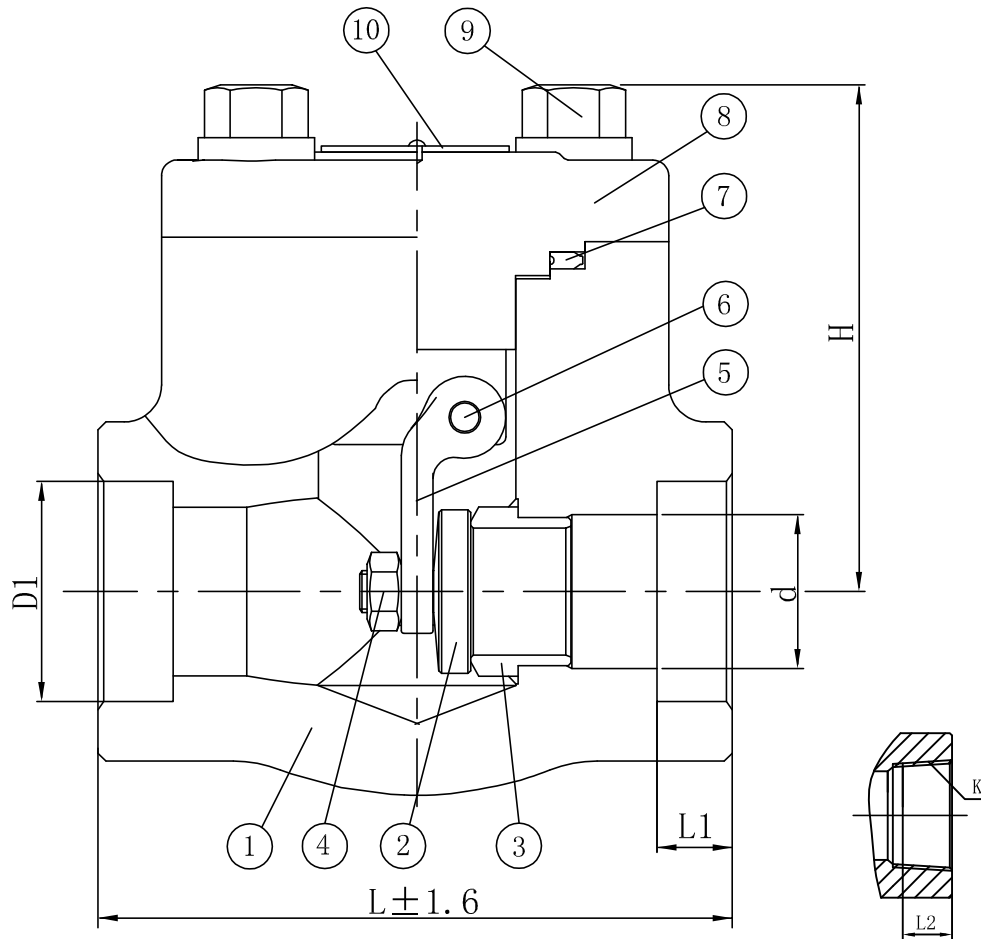
| NO. | DATE   | DESCRIPTION         | PRP'D | REV'D | APP'D | MARKING SYSTEM | MSS-SP-25 | INSPECTION & TEST: API 598 |
|-----|--------|---------------------|-------|-------|-------|----------------|-----------|----------------------------|
|     |        |                     |       |       |       | FACE TO FACE   | API 602   | SHELL HYDRO 2975PSI        |
|     |        |                     |       |       |       | WALL THICKNESS | BS1868    | SEAT AIR 80PSI             |
|     |        |                     |       |       |       | DESIGNED       | API 602   | BACK SEAT HYDRO 2175PSI    |
|     |        |                     |       |       |       |                |           | NACE MR 0175               |
| Δ   | 1/1/12 | ISSUED FOR PROPOSAL |       |       |       |                |           |                            |

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**TITLE: FORGED STEEL BOLTED COVER SWING CHECK VALVE - CLASS 800 - API TRIM 8**

MATERIAL: A105N      UNITS: Inch, mm  
 CLASS: 800      DATE: 01/01/12      SCALE: N.T.S.  
 SIZE: 1/2 - 2"      FIG. No.: F801XS-2N (sw. by thr. ends)  
 DRAWN BY: F.J.      F801SW-2N (sw. ends)  
 F801T-2N (thr. ends)  
 CHK'D & APR'D BY: R.P.      REV: 1      DWG No.: 50SC120137

# Class 800 Swing Check Valve A105N (API Trim 8) NACE



| BILL OF MATERIALS |            |                 |      |
|-------------------|------------|-----------------|------|
| NO.               | PART NAME  | MATERIAL        | QTY. |
| 1                 | BODY       | A105N           | 1    |
| 2                 | DISC       | A276 410        | 1    |
| 3                 | SEAT RING  | A276 410+HF     | 1    |
| 4                 | BOLT       | A194-2HM        | 1    |
| 5                 | ROCKER     | A351 CF3        | 1    |
| 6                 | DOWEL      | A276 304        | 1    |
| 7                 | GASKET     | 304+Graphite    | 1    |
| 8                 | COVER      | A105N           | 1    |
| 9                 | COVER BOLT | A193 B7M        | 4    |
| 10                | NAME PLATE | STAINLESS STEEL | 1    |

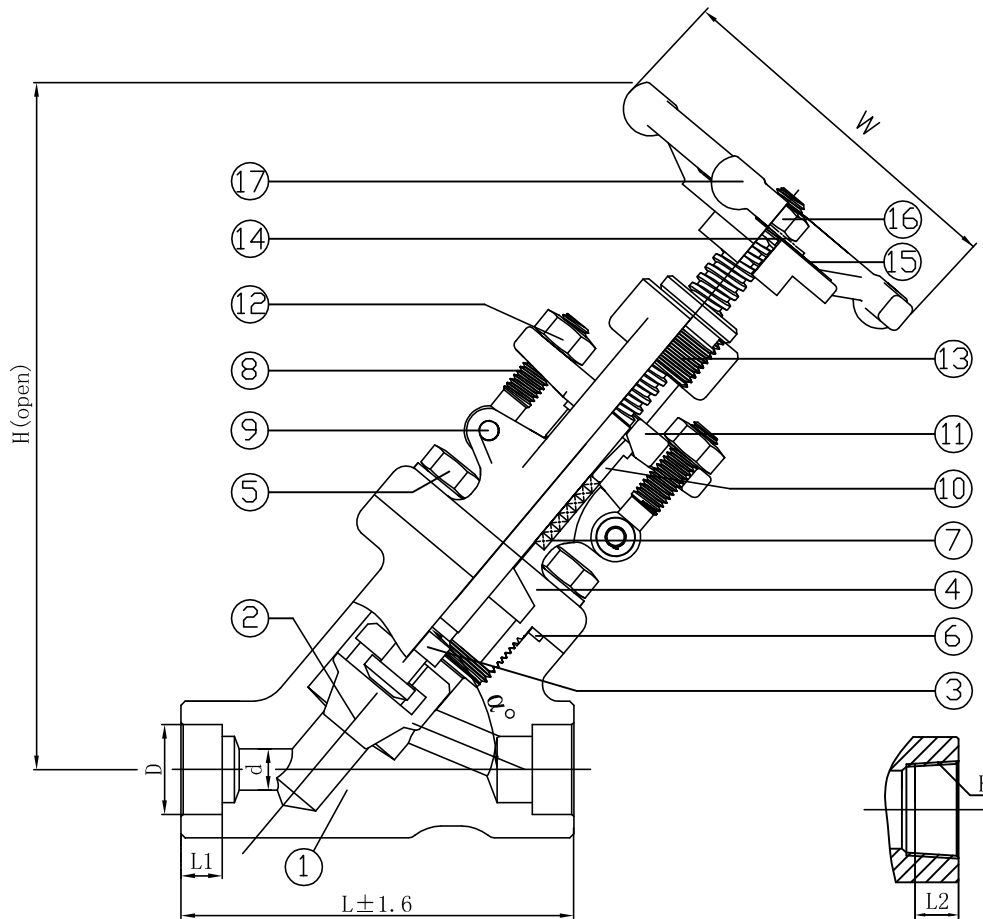
| Valve Size<br>in | L   | d    | D1   | L1 | K      | L2   | H   |
|------------------|-----|------|------|----|--------|------|-----|
| 1/2"             | 79  | 10   | 21.7 | 10 | 1/2"   | 15.5 | 62  |
| 3/4"             | 92  | 13   | 27.2 | 13 | 3/4"   | 16.5 | 63  |
| 1"               | 111 | 18   | 33.9 | 13 | 1"     | 19.5 | 78  |
| 1 1/4"           | 120 | 24   | 42.7 | 13 | 1 1/4" | 21   | 82  |
| 1 1/2"           | 120 | 29   | 48.8 | 13 | 1 1/2" | 21   | 110 |
| 2"               | 140 | 36.5 | 61.2 | 16 | 2"     | 23   | 120 |

| NO. | DATE   | DESCRIPTION         | PRP'D | REV'D | APP'D | MARKING SYSTEM | MSS-SP-25 | INSPECTION & TEST: API 598 |
|-----|--------|---------------------|-------|-------|-------|----------------|-----------|----------------------------|
|     |        |                     |       |       |       | FACE TO FACE   | API 602   | SHELL HYDRO 2975PSI        |
|     |        |                     |       |       |       | WALL THICKNESS | BS1868    | SEAT AIR 80PSI             |
|     |        |                     |       |       |       | DESIGNED       | API 602   | BACK SEAT HYDRO 2175PSI    |
|     |        |                     |       |       |       |                |           | NACE MR 0175               |
| Δ   | 1/1/12 | ISSUED FOR PROPOSAL |       |       |       |                |           |                            |

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 FAX: 718-729-5106

|  |  |                     |
|--|--|---------------------|
| TITLE: FORGED STEEL BOLTED COVER<br>SWING CHECK VALVE - CLASS 800 - API TRIM 8 |  |                     |
| MATERIAL: A105N  | UNITS: Inch, mm  |                     |
| CLASS: 800   | DATE: 01/01/12   | SCALE: N.T.S.       |
| SIZE: 1/2 - 2"   | FIG. No.: F801XS-2N (sw. by thr. ends)<br>F801SW-2N (sw. ends)<br>F801T-2N (thr. ends) |                     |
| DRAWN BY: F.J.   |  |                     |
| CHK'D & APR'D BY: R.P.   | REV: 1   | DWG No.: 50SC120137 |

# Class 800 OS&Y Bolted Bonnet Y Pattern Globe Valve A105N (API Trim 8) NACE



| NO. | PART NAME      | A105N MATERIAL                                       | QTY.  |
|-----|----------------|--|-------|
| 1   | BODY           | A105N+HF   | 1     |
| 2   | DISC           | A276-410   | 1     |
| 3   | STEM           | A276-410   | 1     |
| 4   | BONNET         | A105N  | 1     |
| 5   | BONNET BOLT    | A193 B7M   | 2     |
| 6   | GASKET         | 304 + GRAPHITE                                       | 1     |
| 7   | PACKING        | GRAPHITE WITH CORROSION INHIBITOR & DIE FORMED RINGS | 1 SET |
| 8   | GLAND BOLT     | A193 B7M   | 2     |
| 9   | GLAND BOLT PIN | A276 410   | 2     |
| 10  | PACKING FLANGE | A276 420   | 1     |
| 11  | GLAND FLANGE   | WCB  | 1     |
| 12  | NUT            | A194 2HM   | 2     |
| 13  | STEM NUT       | A276 410   | 1     |
| 14  | WASHER         | A276 410   | 1     |
| 15  | NAMEPLATE      | STAINLESS STEEL                                      | 1     |
| 16  | HAND WHEEL NUT | A108 1020  | 1     |
| 17  | HAND WHEEL     | A197   | 1     |

| VALVE SIZE | L   | d   | D     | L1 | α°  | H   | W    | K      | L2   |
|------------|-----|-----|-------|----|-----|-----|------|--------|------|
| 15 1/2"    | 98  | ø10 | ø21.8 | 10 | 55° | 240 | ø100 | 1/2"   | 15.5 |
| 20 3/4"    | 98  | ø13 | ø27.2 | 13 | 55° | 240 | ø100 | 3/4"   | 16.5 |
| 25 1"      | 120 | ø18 | ø33.9 | 13 | 55° | 290 | ø125 | 1"     | 19.5 |
| 32 1 1/4"  | 140 | ø23 | ø42.7 | 13 | 60° | 302 | ø160 | 1 1/4" | 21   |
| 40 1 1/2"  | 140 | ø29 | ø48.8 | 13 | 60° | 368 | ø160 | 1 1/2" | 21   |
| 50 2"      | 170 | ø35 | ø61.2 | 16 | 45° | 370 | ø180 | 2"     | 23   |

| NO. | DATE   | DESCRIPTION         | PRP'D | REV'D | APP'D |
|-----|--------|---------------------|-------|-------|-------|
| Δ   | 1/1/12 | ISSUED FOR PROPOSAL |       |       |       |

| MARKING SYSTEM | MSS-SP-25 | INSPECTION & TEST: API 598 |
|----------------|-----------|----------------------------|
| FACE TO FACE   | API 602   | SHELL HYDRO 2975PSI        |
| WALL THICKNESS | BS1868    | SEAT AIR 80PSI             |
| DESIGNED       | API 602   | BACK SEAT HYDRO 2175PSI    |

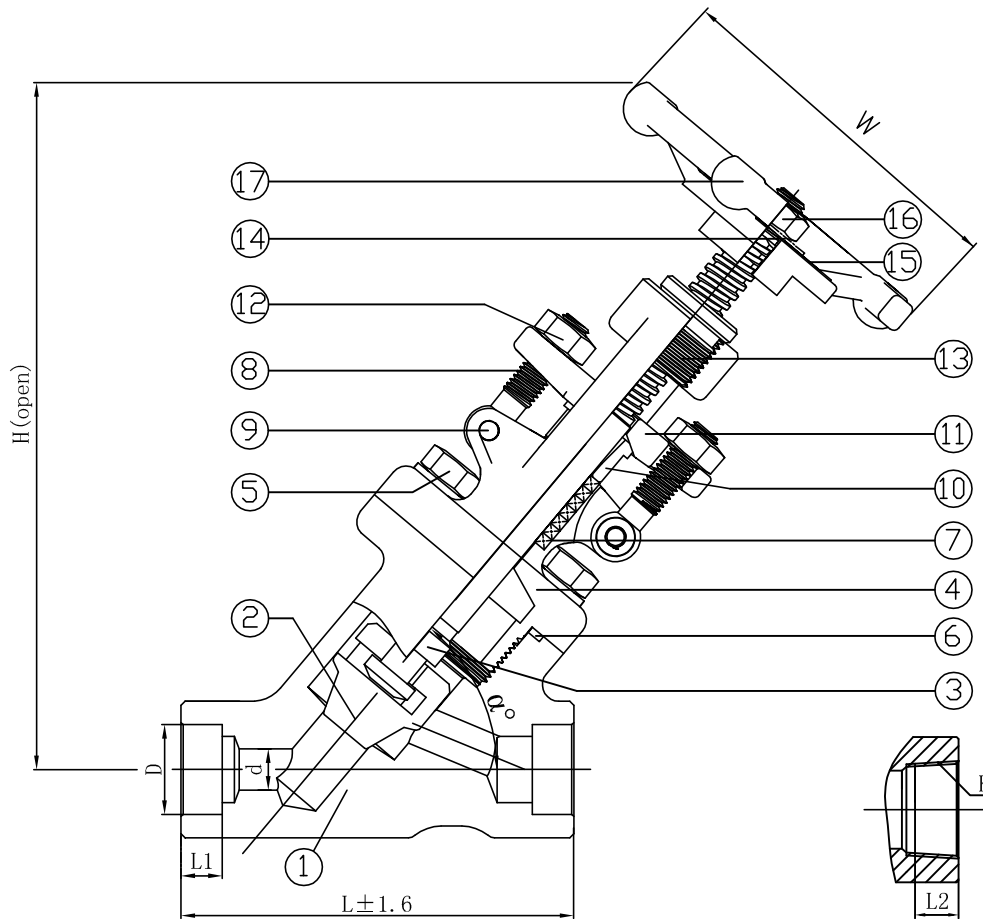
NACE MR 0175

**WILLIAM E. WILLIAMS VALVE CORPORATION**  
 WWW.WILLIAMSVALVE.COM  
 38-52 REVIEW AVENUE  
 LONG ISLAND CITY, NY 11101  
 TEL: 718-392-1660  
 FAX: 718-729-5106

**TITLE: FORGED STEEL BOLTED BONNET Y PATTERN GLOBE VALVE - CLASS 800 - API TRIM 8**

MATERIAL: A105N      UNITS: Inch, mm  
 CLASS: 800      DATE: 01/01/12      SCALE: N.T.S.  
 SIZE: 1/2 - 2"      FIG. No.: F802YTXS-2N (sw. by thr. ends)  
 DRAWN BY: F.J.      F802YSW-2N (sw. ends)  
 F802YT-2N (thr. ends)  
 CHK'D & APR'D BY: R.P.      REV: 1      DWG No.: 50YGL120101

# Class 800 OS&Y Bolted Bonnet Y Pattern Globe Valve A105N (API Trim 8) NACE



| NO. | PART NAME      | A105N MATERIAL                                       | QTY.  |
|-----|----------------|--|-------|
| 1   | BODY           | A105N+HF   | 1     |
| 2   | DISC           | A276-410   | 1     |
| 3   | STEM           | A276-410   | 1     |
| 4   | BONNET         | A105N  | 1     |
| 5   | BONNET BOLT    | A193 B7M   | 2     |
| 6   | GASKET         | 304 + GRAPHITE                                       | 1     |
| 7   | PACKING        | GRAPHITE WITH CORROSION INHIBITOR & DIE FORMED RINGS | 1 SET |
| 8   | GLAND BOLT     | A193 B7M   | 2     |
| 9   | GLAND BOLT PIN | A276 410   | 2     |
| 10  | PACKING FLANGE | A276 420   | 1     |
| 11  | GLAND FLANGE   | WCB  | 1     |
| 12  | NUT            | A194 2HM   | 2     |
| 13  | STEM NUT       | A276 410   | 1     |
| 14  | WASHER         | A276 410   | 1     |
| 15  | NAMEPLATE      | STAINLESS STEEL                                      | 1     |
| 16  | HAND WHEEL NUT | A108 1020  | 1     |
| 17  | HAND WHEEL     | A197   | 1     |

| VALVE SIZE   | L   | d   | D     | L1 | α   | H   | W    | K      | L2   |
|--------------|-----|-----|-------|----|-----|-----|------|--------|------|
| 15 1/2" DN   | 98  | ø10 | ø21.8 | 10 | 55° | 240 | ø100 | 1/2"   | 15.5 |
| 20 3/4" DN   | 98  | ø13 | ø27.2 | 13 | 55° | 240 | ø100 | 3/4"   | 16.5 |
| 25 1" DN     | 120 | ø18 | ø33.9 | 13 | 55° | 290 | ø125 | 1"     | 19.5 |
| 32 1 1/4" DN | 140 | ø23 | ø42.7 | 13 | 60° | 302 | ø160 | 1 1/4" | 21   |
| 40 1 1/2" DN | 140 | ø29 | ø48.8 | 13 | 60° | 368 | ø160 | 1 1/2" | 21   |
| 50 2" DN     | 170 | ø35 | ø61.2 | 16 | 45° | 370 | ø180 | 2"     | 23   |

| NO. | DATE   | DESCRIPTION         | PRP'D | REV'D | APP'D |
|-----|--------|---------------------|-------|-------|-------|
| Δ   | 1/1/12 | ISSUED FOR PROPOSAL |       |       |       |

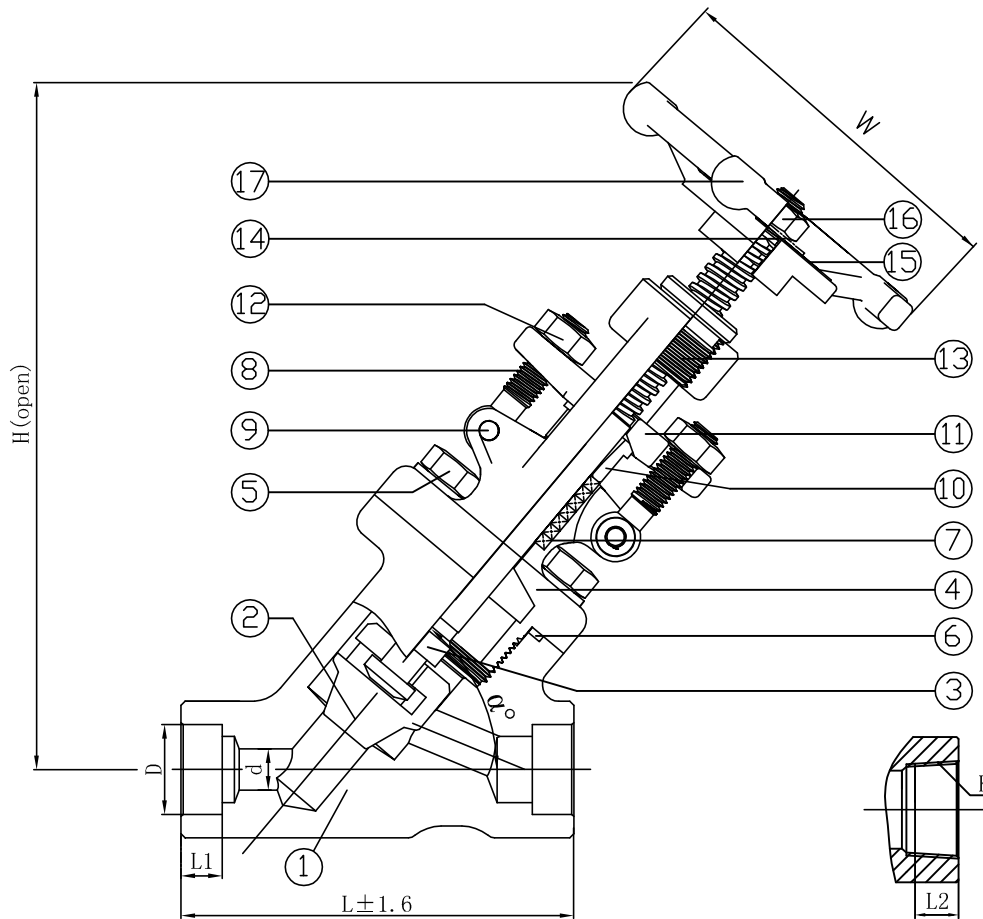
| MARKING SYSTEM | MSS-SP-25 | INSPECTION & TEST: API 598 |
|----------------|-----------|----------------------------|
| FACE TO FACE   | API 602   | SHELL HYDRO 2975PSI        |
| WALL THICKNESS | BS1868    | SEAT AIR 80PSI             |
| DESIGNED       | API 602   | BACK SEAT HYDRO 2175PSI    |

NACE MR 0175

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 FAX: 718-729-5106

|  |  |
|--|--|
| TITLE: FORGED STEEL BOLTED BONNET Y PATTERN GLOBE VALVE - CLASS 800 - API TRIM 8 |  |
| MATERIAL: A105N  | UNITS: Inch, mm  |
| CLASS: 800   | DATE: 01/01/12   |
| SCALE: N.T.S.  |  |
| SIZE: 1/2 - 2"   | FIG. No.: F802YTXS-2N (sw. by thr. ends)<br>F802YSW-2N (sw. ends)<br>F802YT-2N (thr. ends) |
| DRAWN BY: F.J.   |  |
| CHK'D & APR'D BY: R.P.   | REV: 1   |
|  | DWG No.: 50YGL120101   |

# Class 800 OS&Y Bolted Bonnet Y Pattern Globe Valve A105N (API Trim 8) NACE



| NO. | PART NAME      | A105N MATERIAL                                       | QTY.  |
|-----|----------------|--|-------|
| 1   | BODY           | A105N+HF   | 1     |
| 2   | DISC           | A276-410   | 1     |
| 3   | STEM           | A276-410   | 1     |
| 4   | BONNET         | A105N  | 1     |
| 5   | BONNET BOLT    | A193 B7M   | 2     |
| 6   | GASKET         | 304 + GRAPHITE                                       | 1     |
| 7   | PACKING        | GRAPHITE WITH CORROSION INHIBITOR & DIE FORMED RINGS | 1 SET |
| 8   | GLAND BOLT     | A193 B7M   | 2     |
| 9   | GLAND BOLT PIN | A276 410   | 2     |
| 10  | PACKING FLANGE | A276 420   | 1     |
| 11  | GLAND FLANGE   | WCB  | 1     |
| 12  | NUT            | A194 2HM   | 2     |
| 13  | STEM NUT       | A276 410   | 1     |
| 14  | WASHER         | A276 410   | 1     |
| 15  | NAMEPLATE      | STAINLESS STEEL                                      | 1     |
| 16  | HAND WHEEL NUT | A108 1020  | 1     |
| 17  | HAND WHEEL     | A197   | 1     |

| VALVE SIZE   | L   | d   | D     | L1 | α°  | H   | W    | K      | L2   |
|--------------|-----|-----|-------|----|-----|-----|------|--------|------|
| 15 1/2" DN   | 98  | ø10 | ø21.8 | 10 | 55° | 240 | ø100 | 1/2"   | 15.5 |
| 20 1/2" DN   | 98  | ø13 | ø27.2 | 13 | 55° | 240 | ø100 | 3/4"   | 16.5 |
| 25 1" DN     | 120 | ø18 | ø33.9 | 13 | 55° | 290 | ø125 | 1"     | 19.5 |
| 32 1 1/4" DN | 140 | ø23 | ø42.7 | 13 | 60° | 302 | ø160 | 1 1/4" | 21   |
| 40 1 1/2" DN | 140 | ø29 | ø48.8 | 13 | 60° | 368 | ø160 | 1 1/2" | 21   |
| 50 2" DN     | 170 | ø35 | ø61.2 | 16 | 45° | 370 | ø180 | 2"     | 23   |

| NO. | DATE   | DESCRIPTION         | PRP'D | REV'D | APP'D |
|-----|--------|---------------------|-------|-------|-------|
| Δ   | 1/1/12 | ISSUED FOR PROPOSAL |       |       |       |

| MARKING SYSTEM | MSS-SP-25 | INSPECTION & TEST: API 598 |
|----------------|-----------|----------------------------|
| FACE TO FACE   | API 602   | SHELL HYDRO 2975PSI        |
| WALL THICKNESS | BS1868    | SEAT AIR 80PSI             |
| DESIGNED       | API 602   | BACK SEAT HYDRO 2175PSI    |

NACE MR 0175

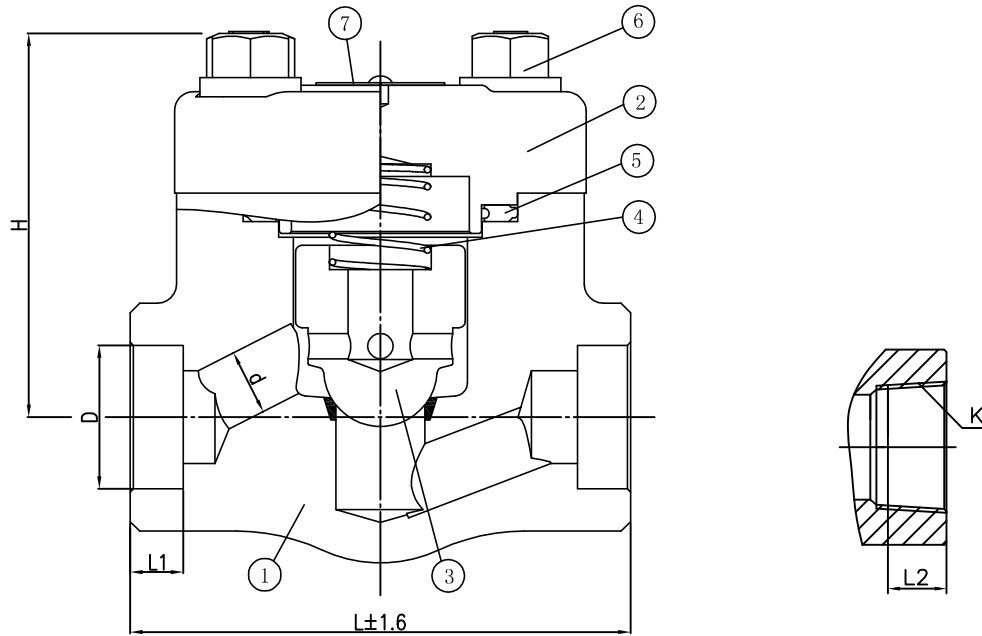
WILLIAM E. VALVE CORPORATION  
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 38-52 REVIEW AVENUE  
 LONG ISLAND CITY, NY 11101  
 TEL: 718-392-1660  
 FAX: 718-729-5106

|  |  |
|--|--|
| TITLE: FORGED STEEL BOLTED BONNET Y PATTERN GLOBE VALVE - CLASS 800 - API TRIM 8 |  |
| MATERIAL: A105N  | UNITS: Inch, mm  |
| CLASS: 800   | DATE: 01/01/12   |
| SCALE: N.T.S.  | FIG. No.: F802YTXS-2N (sw. by thr. ends)<br>F802YSW-2N (sw. ends)<br>F802YT-2N (thr. ends) |
| SIZE: 1/2 - 2"   | DRAWN BY: F.J.   |
| CHK'D & APR'D BY: R.P.   | REV: 1   |
| DWG No.: 50YGL120101   |  |

# Class 1500 BB Ball Check Valve A105N (API Trim 8) NACE

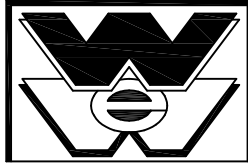
## BILL OF MATERIALS

| ITEM | PART NAME   | MATERIAL        | QTY |
|------|-------------|-----------------|-----|
| 1    | BODY        | A105N + HF      | 1   |
| 2    | COVER       | A105N           | 1   |
| 3    | BALL DISC   | A276-420        | 1   |
| 4    | SPRING      | 304 SS          | 1   |
| 5    | GASKET      | F304+Graphite   | 1   |
| 6    | BONNET BOLT | A193-B7M        | 4   |
| 7    | NAME PLATE  | STAINLESS STEEL | 1   |



| VALVE SIZE |        | L   | d   | D     | L1 | H   | K      | L2    |
|------------|--------|-----|-----|-------|----|-----|--------|-------|
| DN         | IN     |     |     |       |    |     |        |       |
| 15         | 1/2"   | 111 | Ø10 | Ø21.8 | 10 | 98  | 1/2"   | Ø15.5 |
| 20         | 3/4"   | 111 | Ø14 | Ø27.2 | 13 | 98  | 3/4"   | Ø16.5 |
| 25         | 1"     | 120 | Ø19 | Ø33.9 | 13 | 104 | 1"     | Ø19.5 |
| 32         | 1 1/4" | 152 | Ø25 | Ø42.7 | 13 | 120 | 1 1/4" | Ø21   |
| 40         | 1 1/2" | 172 | Ø29 | Ø48.8 | 13 | 140 | 1 1/2" | Ø21   |
| 50         | 2"     | 220 | Ø35 | Ø61.2 | 16 | 158 | 2"     | Ø23   |

| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | MARKING SYSTEM | MSS-SP-25 | INSPECTION & TEST: API 598 |       |         |
|-----|------|-------------|-------|-------|-------|----------------|-----------|----------------------------|-------|---------|
|     |      |             |       |       |       | FACE TO FACE   | API 602   | SHELL                      | HYDRO | 5598PSI |
|     |      |             |       |       |       | WALL THICKNESS | BS1868    | SEAT                       | AIR   | 80PSI   |
|     |      |             |       |       |       | DESIGNED       | API 602   | BACK SEAT                  | HYDRO | 4100PSI |
|     |      |             |       |       |       |                |           | NACE MR 0175               |       |         |



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**TITLE:** FORGED STEEL BOLTED BONNET  
BALL CHECK VALVE - CLASS 1500 - API TRIM 8

**MATERIAL:** A105N      **UNITS:** Inch, mm

**CLASS:** 1500      **DATE:** 01/01/12      **SCALE:** N.T.S.

**SIZE:** 1/2 - 2"      **FIG. No.:**  
F1501BTXS-2N (sw. by thr. ends)  
F1501BSW-2N (sw. ends)  
F1501BT-2N (thr. ends)

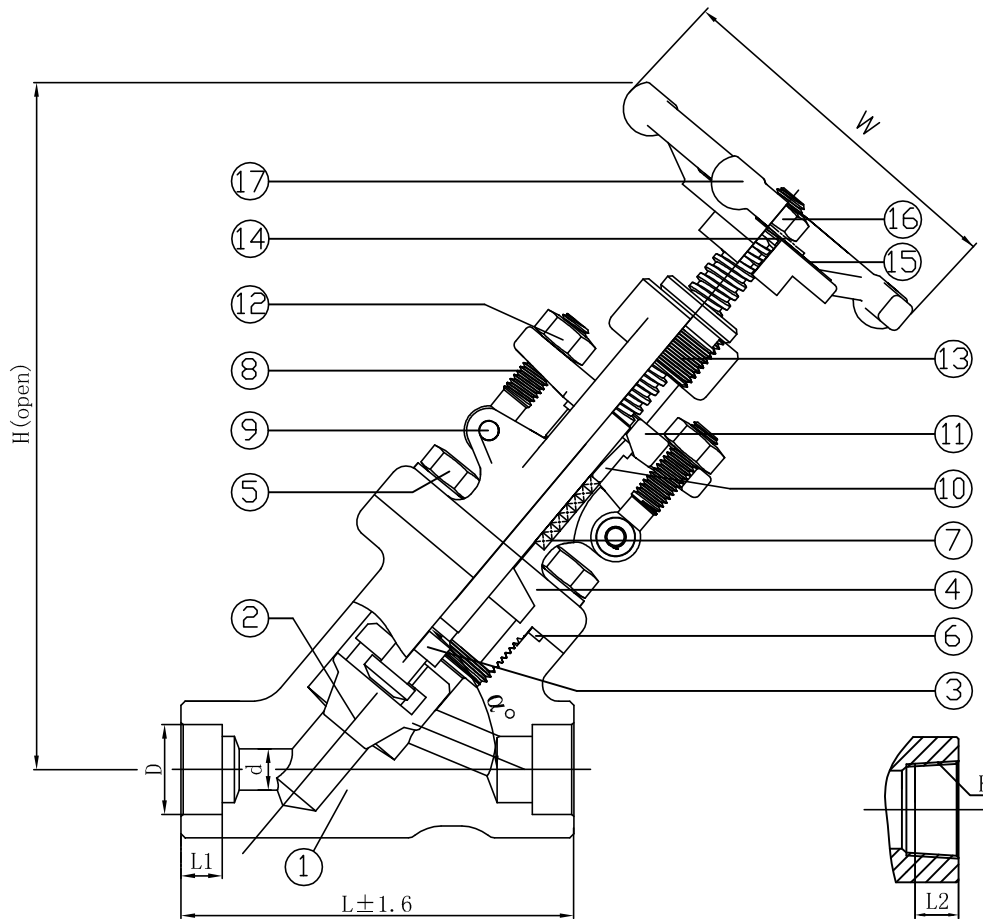
**DRAWN BY:** F.J.

**CHK'D & APR'D BY:** R.P.      **REV:** 1      **DWG No.:** 50BC120273





# Class 1500 OS&Y Bolted Bonnet Y Pattern Globe Valve A105N (API Trim 8) NACE



| NO. | PART NAME      | A105N MATERIAL                                       | QTY.  |
|-----|----------------|--|-------|
| 1   | BODY           | A105N+HF   | 1     |
| 2   | DISC           | A276-410   | 1     |
| 3   | STEM           | A276-410   | 1     |
| 4   | BONNET         | A105N  | 1     |
| 5   | BONNET BOLT    | A193 B7M   | 2     |
| 6   | GASKET         | 304 + GRAPHITE                                       | 1     |
| 7   | PACKING        | GRAPHITE WITH CORROSION INHIBITOR & DIE FORMED RINGS | 1 SET |
| 8   | GLAND BOLT     | A193 B7M   | 2     |
| 9   | GLAND BOLT PIN | A276 410   | 2     |
| 10  | PACKING FLANGE | A276 420   | 1     |
| 11  | GLAND FLANGE   | WCB  | 1     |
| 12  | NUT            | A194 2HM   | 2     |
| 13  | STEM NUT       | A276 410   | 1     |
| 14  | WASHER         | A276 410   | 1     |
| 15  | NAMEPLATE      | STAINLESS STEEL                                      | 1     |
| 16  | HAND WHEEL NUT | A108 1020  | 1     |
| 17  | HAND WHEEL     | A197   | 1     |

| VALVE SIZE |        | L   | d   | D     | L1 | α°  | H   | W    | K      | L2   |
|------------|--------|-----|-----|-------|----|-----|-----|------|--------|------|
| DN         | IN     |     |     |       |    |     |     |      |        |      |
| 15         | 1/2"   | 98  | ∅10 | ∅21.8 | 10 | 55° | 170 | ∅125 | 1/2"   | 15.5 |
| 20         | 3/4"   | 120 | ∅13 | ∅27.2 | 13 | 55° | 195 | ∅125 | 3/4"   | 16.5 |
| 25         | 1"     | 140 | ∅18 | ∅33.9 | 13 | 55° | 235 | ∅160 | 1"     | 19.5 |
| 32         | 1 1/4" | 140 | ∅23 | ∅42.7 | 13 | 60° | 278 | ∅160 | 1 1/4" | 21   |
| 40         | 1 1/2" | 170 | ∅29 | ∅48.8 | 13 | 60° | 278 | ∅180 | 1 1/2" | 21   |
| 50         | 2"     | 190 | ∅35 | ∅61.2 | 16 | 45° | 310 | ∅200 | 2"     | 23   |

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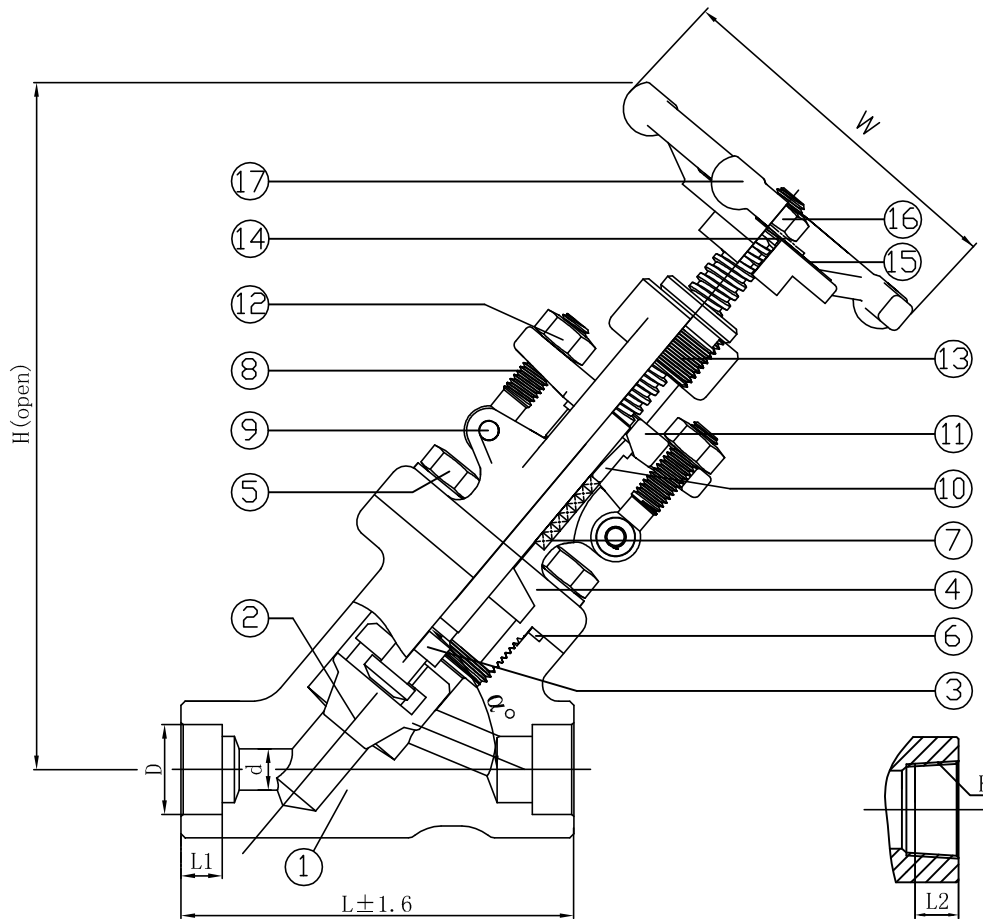
TITLE: FORGED STEEL BOLTED BONNET  
 Y PATTERN GLOBE VALVE - CLASS 1500 - API TRIM 8

|                 |   |
|-----------------|---|
| MATERIAL: A105N | UNITS: Inch, mm   |
| CLASS: 1500     | DATE: 01/01/12  |
| SCALE: N.T.S.   |   |
| SIZE: 1/2 - 2"  | FIG. No.: F1502YTXS-2N (sw. by thr. ends)<br>F1502YSW-2N (sw. ends)<br>F1502YT-2N (thr. ends) |
| DRAWN BY: F.J.  | CHK'D & APR'D BY: R.P.  |
| REV: 1          | DWG No.: 50YGL120191  |

| NO. | DATE   | DESCRIPTION         | PRP'D | REV'D | APP'D |
|-----|--------|---------------------|-------|-------|-------|
| Δ   | 1/1/12 | ISSUED FOR PROPOSAL |       |       |       |

|                |           |                            |
|----------------|-----------|----------------------------|
| MARKING SYSTEM | MSS-SP-25 | INSPECTION & TEST: API 598 |
| FACE TO FACE   | API 602   | SHELL HYDRO 5598PSI        |
| WALL THICKNESS | BS1868    | SEAT AIR 80PSI             |
| DESIGNED       | API 602   | BACK SEAT HYDRO 4100PSI    |
| NACE MR 0175   |           |                            |

# Class 1500 OS&Y Bolted Bonnet Y Pattern Globe Valve A105N (API Trim 8) NACE



| NO. | PART NAME      | A105N MATERIAL                                       | QTY.  |
|-----|----------------|--|-------|
| 1   | BODY           | A105N+HF   | 1     |
| 2   | DISC           | A276-410   | 1     |
| 3   | STEM           | A276-410   | 1     |
| 4   | BONNET         | A105N  | 1     |
| 5   | BONNET BOLT    | A193 B7M   | 2     |
| 6   | GASKET         | 304 + GRAPHITE                                       | 1     |
| 7   | PACKING        | GRAPHITE WITH CORROSION INHIBITOR & DIE FORMED RINGS | 1 SET |
| 8   | GLAND BOLT     | A193 B7M   | 2     |
| 9   | GLAND BOLT PIN | A276 410   | 2     |
| 10  | PACKING FLANGE | A276 420   | 1     |
| 11  | GLAND FLANGE   | WCB  | 1     |
| 12  | NUT            | A194 2HM   | 2     |
| 13  | STEM NUT       | A276 410   | 1     |
| 14  | WASHER         | A276 410   | 1     |
| 15  | NAMEPLATE      | STAINLESS STEEL                                      | 1     |
| 16  | HAND WHEEL NUT | A108 1020  | 1     |
| 17  | HAND WHEEL     | A197   | 1     |

| VALVE SIZE |        | L   | d   | D     | L1 | α°  | H   | W    | K      | L2   |
|------------|--------|-----|-----|-------|----|-----|-----|------|--------|------|
| DN         | IN     |     |     |       |    |     |     |      |        |      |
| 15         | 1/2"   | 98  | ∅10 | ∅21.8 | 10 | 55° | 170 | ∅125 | 1/2"   | 15.5 |
| 20         | 3/4"   | 120 | ∅13 | ∅27.2 | 13 | 55° | 195 | ∅125 | 3/4"   | 16.5 |
| 25         | 1"     | 140 | ∅18 | ∅33.9 | 13 | 55° | 235 | ∅160 | 1"     | 19.5 |
| 32         | 1 1/4" | 140 | ∅23 | ∅42.7 | 13 | 60° | 278 | ∅160 | 1 1/4" | 21   |
| 40         | 1 1/2" | 170 | ∅29 | ∅48.8 | 13 | 60° | 278 | ∅180 | 1 1/2" | 21   |
| 50         | 2"     | 190 | ∅35 | ∅61.2 | 16 | 45° | 310 | ∅200 | 2"     | 23   |

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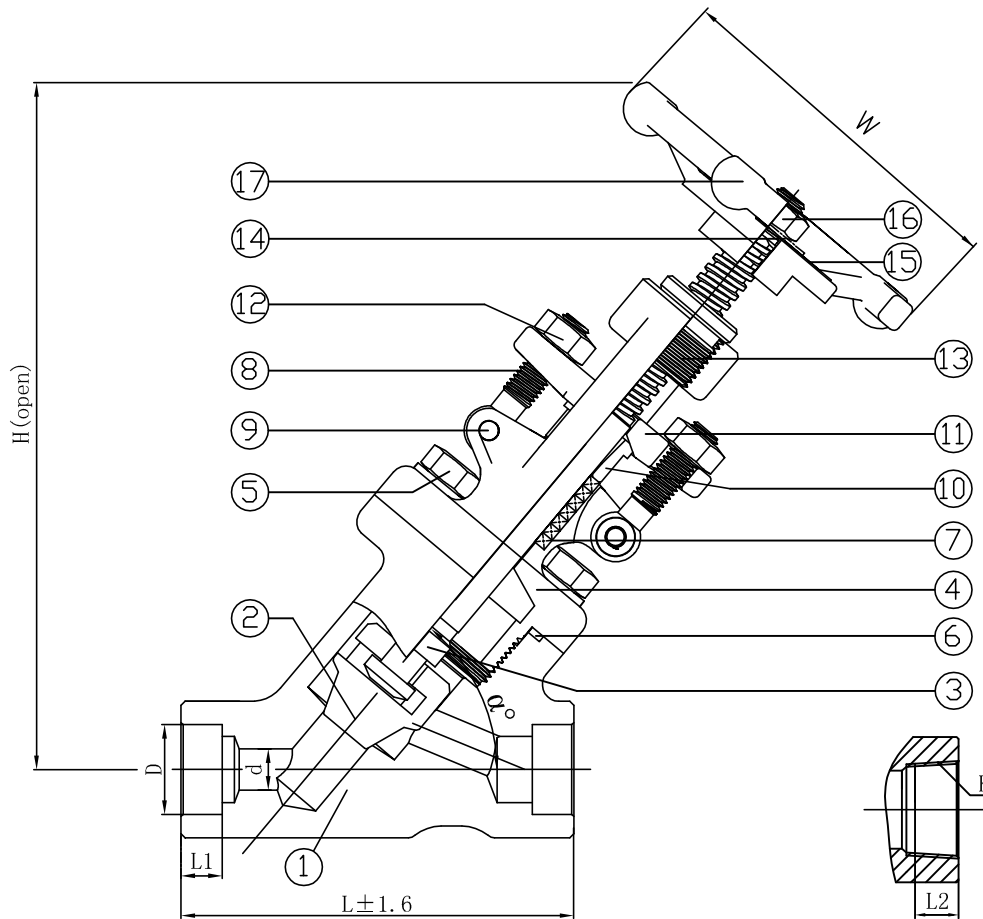
TITLE: FORGED STEEL BOLTED BONNET  
 Y PATTERN GLOBE VALVE - CLASS 1500 - API TRIM 8

|                 |   |
|-----------------|---|
| MATERIAL: A105N | UNITS: Inch, mm   |
| CLASS: 1500     | DATE: 01/01/12  |
| SCALE: N.T.S.   |   |
| SIZE: 1/2 - 2"  | FIG. No.: F1502YTXS-2N (sw. by thr. ends)<br>F1502YSW-2N (sw. ends)<br>F1502YT-2N (thr. ends) |
| DRAWN BY: F.J.  | CHK'D & APR'D BY: R.P.  |
| REV: 1          | DWG No.: 50YGL120191  |

| NO. | DATE   | DESCRIPTION         | PRP'D | REV'D | APP'D |
|-----|--------|---------------------|-------|-------|-------|
| Δ   | 1/1/12 | ISSUED FOR PROPOSAL |       |       |       |

|                |           |                            |
|----------------|-----------|----------------------------|
| MARKING SYSTEM | MSS-SP-25 | INSPECTION & TEST: API 598 |
| FACE TO FACE   | API 602   | SHELL HYDRO 5598PSI        |
| WALL THICKNESS | BS1868    | SEAT AIR 80PSI             |
| DESIGNED       | API 602   | BACK SEAT HYDRO 4100PSI    |
| NACE MR 0175   |           |                            |

# Class 1500 OS&Y Bolted Bonnet Y Pattern Globe Valve A105N (API Trim 8) NACE



| NO. | PART NAME      | A105N MATERIAL                                       | QTY.  |
|-----|----------------|--|-------|
| 1   | BODY           | A105N+HF   | 1     |
| 2   | DISC           | A276-410   | 1     |
| 3   | STEM           | A276-410   | 1     |
| 4   | BONNET         | A105N  | 1     |
| 5   | BONNET BOLT    | A193 B7M   | 2     |
| 6   | GASKET         | 304 + GRAPHITE                                       | 1     |
| 7   | PACKING        | GRAPHITE WITH CORROSION INHIBITOR & DIE FORMED RINGS | 1 SET |
| 8   | GLAND BOLT     | A193 B7M   | 2     |
| 9   | GLAND BOLT PIN | A276 410   | 2     |
| 10  | PACKING FLANGE | A276 420   | 1     |
| 11  | GLAND FLANGE   | WCB  | 1     |
| 12  | NUT            | A194 2HM   | 2     |
| 13  | STEM NUT       | A276 410   | 1     |
| 14  | WASHER         | A276 410   | 1     |
| 15  | NAMEPLATE      | STAINLESS STEEL                                      | 1     |
| 16  | HAND WHEEL NUT | A108 1020  | 1     |
| 17  | HAND WHEEL     | A197   | 1     |

| VALVE SIZE |        | L   | d   | D     | L1 | α°  | H   | W    | K      | L2   |
|------------|--------|-----|-----|-------|----|-----|-----|------|--------|------|
| DN         | IN     |     |     |       |    |     |     |      |        |      |
| 15         | 1/2"   | 98  | ∅10 | ∅21.8 | 10 | 55° | 170 | ∅125 | 1/2"   | 15.5 |
| 20         | 3/4"   | 120 | ∅13 | ∅27.2 | 13 | 55° | 195 | ∅125 | 3/4"   | 16.5 |
| 25         | 1"     | 140 | ∅18 | ∅33.9 | 13 | 55° | 235 | ∅160 | 1"     | 19.5 |
| 32         | 1 1/4" | 140 | ∅23 | ∅42.7 | 13 | 60° | 278 | ∅160 | 1 1/4" | 21   |
| 40         | 1 1/2" | 170 | ∅29 | ∅48.8 | 13 | 60° | 278 | ∅180 | 1 1/2" | 21   |
| 50         | 2"     | 190 | ∅35 | ∅61.2 | 16 | 45° | 310 | ∅200 | 2"     | 23   |

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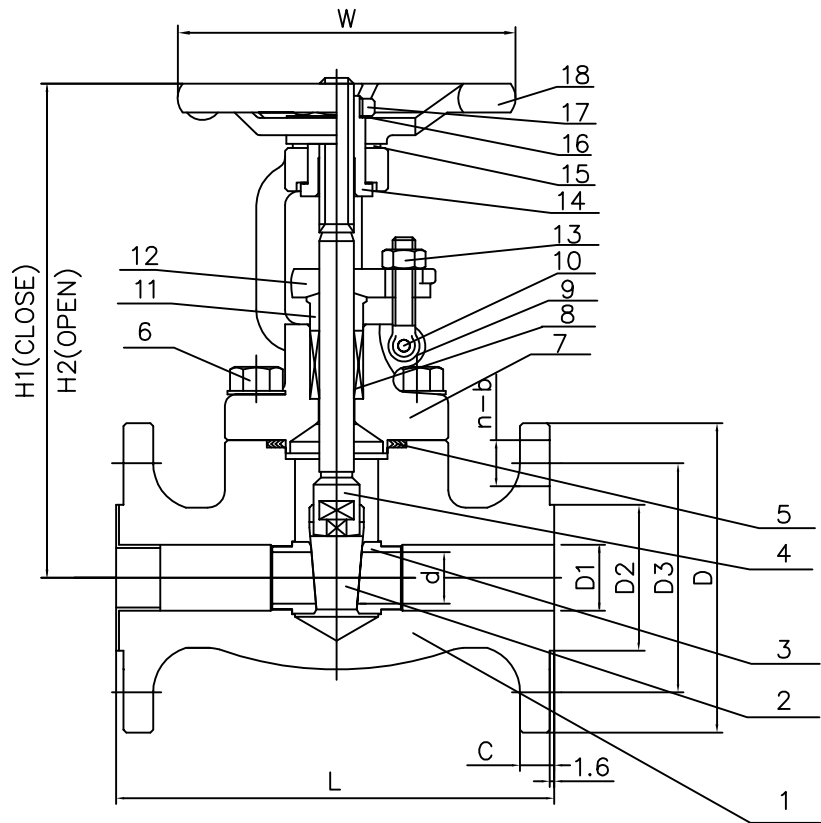
TITLE: FORGED STEEL BOLTED BONNET  
 Y PATTERN GLOBE VALVE - CLASS 1500 - API TRIM 8

|                 |   |
|-----------------|---|
| MATERIAL: A105N | UNITS: Inch, mm   |
| CLASS: 1500     | DATE: 01/01/12  |
| SCALE: N.T.S.   |   |
| SIZE: 1/2 - 2"  | FIG. No.: F1502YTXS-2N (sw. by thr. ends)<br>F1502YSW-2N (sw. ends)<br>F1502YT-2N (thr. ends) |
| DRAWN BY: F.J.  | CHK'D & APR'D BY: R.P.  |
| REV: 1          | DWG No.: 50YGL120191  |

| NO. | DATE   | DESCRIPTION         | PRP'D | REV'D | APP'D |
|-----|--------|---------------------|-------|-------|-------|
| Δ   | 1/1/12 | ISSUED FOR PROPOSAL |       |       |       |

|                |           |                            |
|----------------|-----------|----------------------------|
| MARKING SYSTEM | MSS-SP-25 | INSPECTION & TEST: API 598 |
| FACE TO FACE   | API 602   | SHELL HYDRO 5598PSI        |
| WALL THICKNESS | BS1868    | SEAT AIR 80PSI             |
| DESIGNED       | API 602   | BACK SEAT HYDRO 4100PSI    |
| NACE MR 0175   |           |                            |

# Wm. E. Williams No. FS15F62N 316 Class 150 RF OS&Y BB Gate Valve F316 (API Trim 12) NACE



| ITEM | PART NAME      | QTY  | MATERIAL   |
|------|----------------|------|--|
| 1    | Body           | 1    | A182-F316  |
| 2    | Disc           | 1    | A276-316   |
| 3    | Seat ring      | 2    | A276-316+HF  |
| 4    | Stem           | 1    | A276-316   |
| 5    | Gasket         | 1    | 304+Graphite   |
| 6    | Bonnet Bolt    | 4    | A193-B8M   |
| 7    | Bonnet         | 1    | A182-F316  |
| 8    | Packing        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 9    | Gland Bolt     | 2    | A276-316   |
| 10   | Gland Bolt Pin | 2    | A276-316   |
| 11   | Packing Flange | 1    | A276-410   |
| 12   | Gland Flange   | 1    | WCB  |
| 13   | Nut            | 2    | A194-8M  |
| 14   | Stem Nut       | 1    | A276-410   |
| 15   | Washer         | 2    | A276-410   |
| 16   | Nameplate      | 1    | STAINLESS STEEL  |
| 17   | Hand Wheel Nut | 1    | A108-1025  |
| 18   | Hand Wheel     | 1    | A197   |

| SIZE   | L   | H1  | H2  | W    | d   | D1  | D2  | D3     | D     | C    | n-b     |
|--------|-----|-----|-----|------|-----|-----|-----|--------|-------|------|---------|
| 1/2"   | 108 | 170 | 180 | ø100 | ø10 | ø16 | ø35 | ø60.5  | ø89   | 12   | 4-ø15.8 |
| 3/4"   | 117 | 172 | 182 | ø100 | ø13 | ø21 | ø43 | ø70    | ø98.5 | 13   | 4-ø15.8 |
| 1"     | 127 | 206 | 216 | ø125 | ø18 | ø26 | ø51 | ø79.5  | ø108  | 14.5 | 4-ø15.8 |
| 1-1/4" | 140 | 230 | 240 | ø160 | ø22 | ø33 | ø64 | ø89    | ø117  | 16   | 4-ø15.8 |
| 1-1/2" | 165 | 236 | 246 | ø160 | ø29 | ø41 | ø73 | ø98.5  | ø127  | 17.5 | 4-ø15.8 |
| 2"     | 178 | 273 | 283 | ø180 | ø36 | ø51 | ø92 | ø120.5 | ø152  | 19.5 | 4-ø19   |

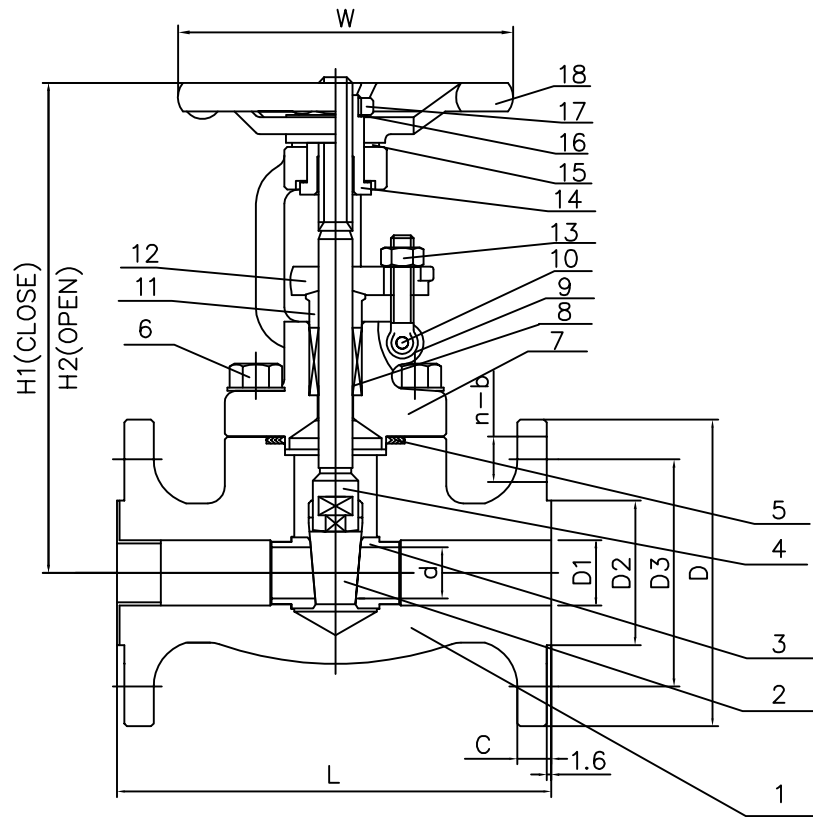


TITLE: FORGED STAINLESS STEEL BOLTED BONNET GATE VALVE  
CLASS 150 - API TRIM 12 - INTEGRAL FLANGES

|     |      |             |       |       |       |                |             |                    |         |                   |           |          |           |               |            |        |
|-----|------|-------------|-------|-------|-------|----------------|-------------|--------------------|---------|-------------------|-----------|----------|-----------|---------------|------------|--------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: | API 598 | MATERIAL:         | F316      | UNITS:   | Inch, mm  |               |            |        |
|     |      |             |       |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL              | HYDRO   | 425PSI            | CLASS:    | 150      | DATE:     | 01/01/12      | SCALE:     | N.T.S. |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT               | AIR     | 80PSI             | SIZE:     | 1/2 - 2" | FIG. No.: | FS15F-62N 316 |            |        |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT          | HYDRO   | 325PSI            | DRAWN BY: | F.J.     |           |               |            |        |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR            | 0175    | CHK'D & APR'D BY: | R.P.      | REV:     | 1         | DWG No.:      | 50GA120003 |        |

1/1/12 ISSUED FOR PROPOSAL

# Wm. E. Williams No. FS30F62N 316 Class 300 RF OS&Y BB Gate Valve F316 (API Trim 12) NACE



| ITEM | PART NAME      | QTY  | MATERIAL   |
|------|----------------|------|--|
| 1    | Body           | 1    | A182-F316  |
| 2    | Disc           | 1    | A276-316   |
| 3    | Seat ring      | 2    | A276-316+HF  |
| 4    | Stem           | 1    | A276-316   |
| 5    | Gasket         | 1    | 304+Graphite   |
| 6    | Bonnet Bolt    | 4    | A193-B8M   |
| 7    | Bonnet         | 1    | A182-F316  |
| 8    | Packing        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 9    | Gland Bolt     | 2    | A276-316   |
| 10   | Gland Bolt Pin | 2    | A276-316   |
| 11   | Packing Flange | 1    | A276-410   |
| 12   | Gland Flange   | 1    | WCB  |
| 13   | Nut            | 2    | A194-8M  |
| 14   | Stem Nut       | 1    | A276-410   |
| 15   | Washer         | 2    | A276-410   |
| 16   | Nameplate      | 1    | STAINLESS STEEL  |
| 17   | Hand Wheel Nut | 1    | A108-1025  |
| 18   | Hand Wheel     | 1    | A197   |

| SIZE   | L   | H1  | H2  | W    | d   | D1  | D2  | D3     | D    | C    | n-b     |
|--------|-----|-----|-----|------|-----|-----|-----|--------|------|------|---------|
| 1/2"   | 140 | 149 | 163 | ø100 | ø13 | ø16 | ø35 | ø66.6  | ø95  | 14.5 | 4-ø15.8 |
| 3/4"   | 152 | 149 | 166 | ø100 | ø13 | ø22 | ø43 | ø82.5  | ø117 | 16   | 4-ø19   |
| 1"     | 165 | 171 | 190 | ø125 | ø18 | ø27 | ø51 | ø89    | ø124 | 18   | 4-ø19   |
| 1-1/4" | 178 | 195 | 219 | ø160 | ø24 | ø34 | ø63 | ø98.5  | ø133 | 19   | 4-ø19   |
| 1-1/2" | 190 | 212 | 246 | ø160 | ø29 | ø42 | ø73 | ø114.5 | ø156 | 21   | 4-ø22   |
| 2"     | 216 | 240 | 283 | ø180 | ø36 | ø51 | ø92 | ø127   | ø165 | 23   | 8-ø19   |

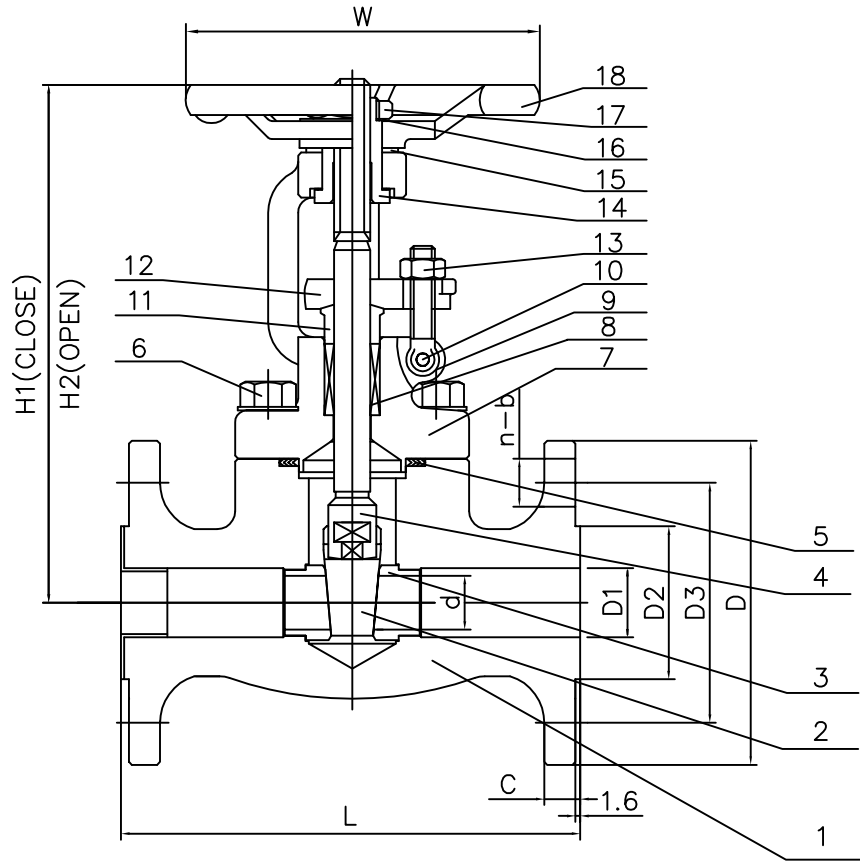


TITLE: FORGED STAINLESS STEEL BOLTED BONNET GATE VALVE  
CLASS 300 - API TRIM 12 - INTEGRAL FLANGES

|     |      |             |       |       |       |                |             |                    |         |                   |           |          |          |          |            |               |
|-----|------|-------------|-------|-------|-------|----------------|-------------|--------------------|---------|-------------------|-----------|----------|----------|----------|------------|---------------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: | API 598 | MATERIAL:         | F316      | UNITS:   | Inch, mm |          |            |               |
|     |      |             |       |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL              | HYDRO   | 1100PSI           | CLASS:    | 300      | DATE:    | 01/01/12 | SCALE:     | N.T.S.        |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT               | AIR     | 80PSI             | SIZE:     | 1/2 - 2" |          |          | FIG. No.:  | FS30F-62N 316 |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT          | HYDRO   | 800PSI            | DRAWN BY: | F.J.     |          |          |            |               |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR            | 0175    | CHK'D & APR'D BY: | R.P.      | REV:     | 1        | DWG No.: | 50GA120019 |               |

1/1/12 ISSUED FOR PROPOSAL

# Wm. E. Williams No. FS60F62N 316 Class 600 RF OS&Y BB Gate Valve F316 (API Trim 12) NACE



| ITEM | PART NAME      | QTY  | MATERIAL   |
|------|----------------|------|--|
| 1    | Body           | 1    | A182-F316  |
| 2    | Disc           | 1    | A276-316   |
| 3    | Seat ring      | 2    | A276-316+HF  |
| 4    | Stem           | 1    | A276-316   |
| 5    | Gasket         | 1    | 304+Graphite   |
| 6    | Bonnet Bolt    | 4    | A193-B8M   |
| 7    | Bonnet         | 1    | A182-F316  |
| 8    | Packing        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 9    | Gland Bolt     | 2    | A276-316   |
| 10   | Gland Bolt Pin | 2    | A276-316   |
| 11   | Packing Flange | 1    | A276-410   |
| 12   | Gland Flange   | 1    | WCB  |
| 13   | Nut            | 2    | A194-8M  |
| 14   | Stem Nut       | 1    | A276-410   |
| 15   | Washer         | 2    | A276-410   |
| 16   | Nameplate      | 1    | STAINLESS STEEL  |
| 17   | Hand Wheel Nut | 1    | A108-1025  |
| 18   | Hand Wheel     | 1    | A197   |

| SIZE   | L   | H1  | H2  | W    | d     | D1    | D2    | D3     | D    | C    | n-b     |
|--------|-----|-----|-----|------|-------|-------|-------|--------|------|------|---------|
| 1/2"   | 165 | 149 | 166 | ø100 | ø13   | ø16   | ø35   | ø67    | ø95  | 21.5 | 4-ø16   |
| 3/4"   | 190 | 149 | 169 | ø100 | ø18   | ø21   | ø43   | ø83    | ø115 | 23   | 4-ø19   |
| 1"     | 216 | 171 | 193 | ø125 | ø24   | ø26.5 | ø51   | ø89    | ø125 | 24.5 | 4-ø19   |
| 1-1/4" | 229 | 195 | 230 | ø160 | ø29   | ø35   | ø63.5 | ø98.5  | ø135 | 28   | 4-ø19   |
| 1-1/2" | 241 | 212 | 246 | ø160 | ø36.5 | ø41   | ø73   | ø114.5 | ø155 | 29.5 | 4-ø22.5 |
| 2"     | 292 | 240 | 283 | ø180 | ø49   | ø52.5 | ø92   | ø127   | ø165 | 32   | 8-ø19   |

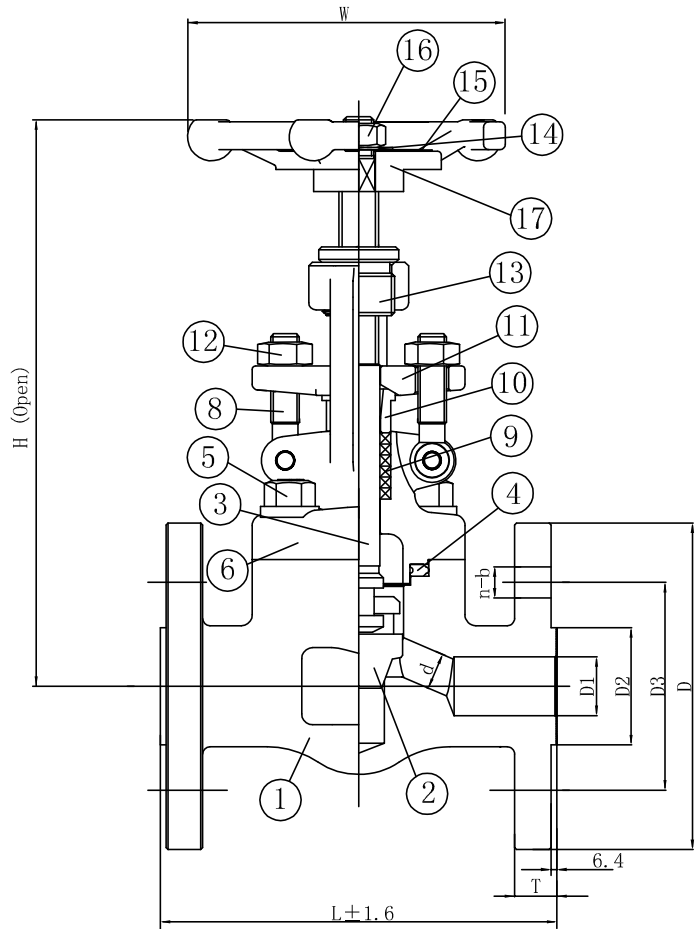


TITLE: FORGED STAINLESS STEEL BOLTED BONNET GATE VALVE  
CLASS 600 - API TRIM 12 - INTEGRAL FLANGES

|     |      |             |       |       |       |                |             |                            |                        |                 |                     |                         |
|-----|------|-------------|-------|-------|-------|----------------|-------------|----------------------------|------------------------|-----------------|---------------------|-------------------------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: API 598 | MATERIAL: F316         | UNITS: Inch, mm |                     |                         |
|     |      |             |       |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL HYDRO                | 2175PSI                | CLASS: 600      | DATE: 01/01/12      | SCALE: N.T.S.           |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT AIR                   | 80PSI                  | SIZE: 1/2 - 2"  |                     | FIG. No.: FS60F-62N 316 |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT HYDRO            | 1600PSI                | DRAWN BY: F.J.  |                     |                         |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR 0175               | CHK'D & APR'D BY: R.P. | REV: 1          | DWG No.: 50GA120035 |                         |

# Wm. E. Williams No. FS152F62N 316 Class 150 RF OS&Y BB Globe Valve F316 (API Trim 12) NACE

| VALVE SIZE |        | L   | d   | D1  | D2  | D3     | D     | T    | n-b   | H   | W   |
|------------|--------|-----|-----|-----|-----|--------|-------|------|-------|-----|-----|
| DN         | IN     |     |     |     |     |        |       |      |       |     |     |
| 15         | 1/2"   | 108 | ∅10 | ∅16 | ∅35 | ∅60.5  | ∅89   | 12   | 4-∅16 | 166 | 100 |
| 20         | 3/4"   | 117 | ∅13 | ∅21 | ∅43 | ∅70    | ∅98.5 | 13   | 4-∅16 | 175 | 100 |
| 25         | 1"     | 127 | ∅18 | ∅26 | ∅51 | ∅79.5  | ∅108  | 14.5 | 4-∅16 | 206 | 125 |
| 32         | 1-1/4" | 140 | ∅22 | ∅33 | ∅64 | ∅89    | ∅117  | 16   | 4-∅16 | 228 | 160 |
| 40         | 1-1/2" | 165 | ∅29 | ∅41 | ∅73 | ∅98.5  | ∅127  | 17.5 | 4-∅16 | 262 | 160 |
| 50         | 2"     | 203 | ∅36 | ∅51 | ∅92 | ∅120.5 | ∅152  | 19.5 | 4-∅20 | 300 | 180 |



| Item | Part Name      | Qty  | Material   |
|------|----------------|------|--|
| 1    | BODY           | 1    | A182-F316 + HF   |
| 2    | DISC           | 1    | A276 316   |
| 3    | STEM           | 1    | A276 316   |
| 4    | GASKET         | 1    | 304+Graphite   |
| 5    | BONNET BOLT    | 4    | A193 B8M   |
| 6    | BONNET         | 1    | A182-F316  |
| 7    | PACKING        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 8    | GLAND BOLT     | 2    | A276 316   |
| 9    | GLAND BOLT PIN | 2    | A276 316   |
| 10   | PACKING FLANGE | 1    | A276 420   |
| 11   | GLAND FLANGE   | 1    | WCB  |
| 12   | NUT            | 2    | A194 8M  |
| 13   | STEM NUT       | 1    | A276 410   |
| 14   | WASHER         | 2    | A276 410   |
| 15   | NAME PLATE     | 1    | STAINLESS STEEL  |
| 16   | HAND WHEEL NUT | 1    | A108 1020  |
| 17   | HAND WHEEL     | 1    | A197   |



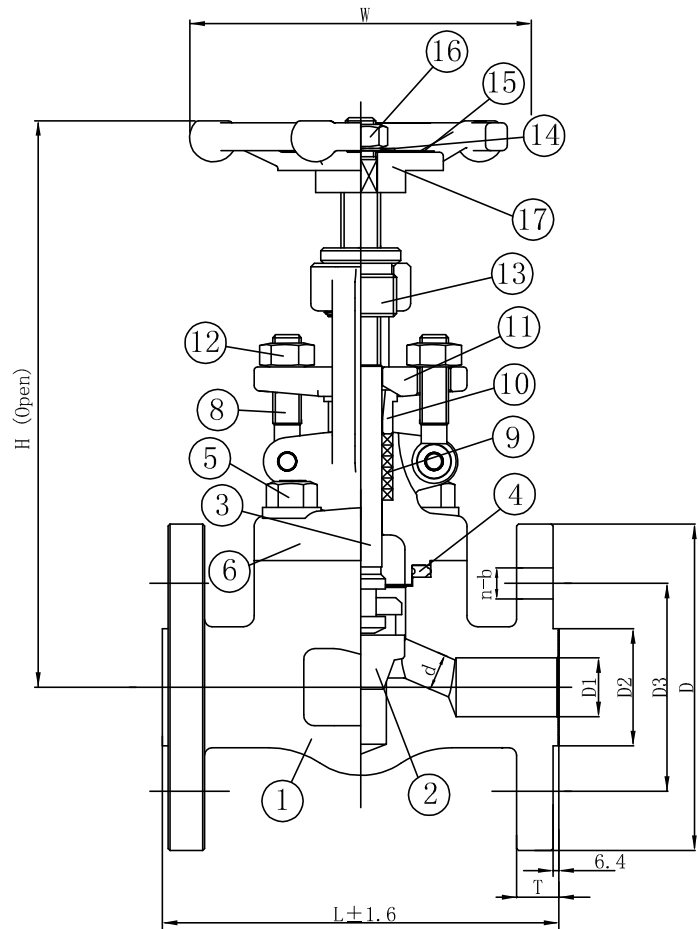
TITLE: FORGED STAINLESS STEEL BOLTED BONNET GLOBE VALVE CLASS 150 - API TRIM 12 - INTEGRAL FLANGES

|   |        |                     |  |  |                |             |                            |                        |                 |                     |
|---|--------|---------------------|--|--|----------------|-------------|----------------------------|------------------------|-----------------|---------------------|
|   |        |                     |  |  | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: API 598 | MATERIAL: F316         | UNITS: Inch, mm |                     |
|   |        |                     |  |  | DIM. OF FLANGE | ANSI B16.5  | SHELL HYDRO 425PSI         | CLASS: 150             | DATE: 01/01/12  | SCALE: N.T.S.       |
|   |        |                     |  |  | FACE TO FACE   | ANSI B16.10 | SEAT AIR 80PSI             | SIZE: 1/2 - 2"         | FIG. No.:       | FS152F-62N 316      |
|   |        |                     |  |  | WALL THICKNESS | BS1868      | BACK SEAT HYDRO 325PSI     | DRAWN BY: F.J.         |                 |                     |
| ▲ | 1/1/12 | ISSUED FOR PROPOSAL |  |  | DESIGNED       | API 602     | NACE MR 0175               | CHK'D & APR'D BY: R.P. | REV: 1          | DWG No.: 50GL120007 |

# Wm. E. Williams No. FS302F62N 316 Class 300 RF OS&Y BB Globe Valve F316 (API Trim 12) NACE

| VALVE SIZE |        | L   | d   | D1  | D2    | D3    | D    | T    | n-b   | H   | W   |
|------------|--------|-----|-----|-----|-------|-------|------|------|-------|-----|-----|
| DN         | IN     |     |     |     |       |       |      |      |       |     |     |
| 15         | 1/2"   | 152 | ∅10 | ∅16 | ∅35   | ∅67   | ∅95  | 15   | 4-∅16 | 166 | 100 |
| 20         | 3/4"   | 178 | ∅13 | ∅21 | ∅43   | ∅83   | ∅115 | 16   | 4-∅19 | 175 | 100 |
| 25         | 1"     | 203 | ∅18 | ∅27 | ∅51   | ∅89   | ∅125 | 18   | 4-∅19 | 206 | 125 |
| 32         | 1-1/4" | 216 | ∅18 | ∅32 | ∅63.5 | ∅98.5 | ∅133 | 19.5 | 4-∅20 | 228 | 160 |
| 40         | 1-1/2" | 229 | ∅29 | ∅41 | ∅73   | ∅114  | ∅155 | 21   | 4-∅22 | 262 | 160 |
| 50         | 2"     | 267 | ∅35 | ∅53 | ∅92   | ∅127  | ∅165 | 23   | 8-∅20 | 300 | 180 |

| Item | Part Name      | Qty  | Material   |
|------|----------------|------|--|
| 1    | BODY           | 1    | A182-F316 + HF   |
| 2    | DISC           | 1    | A276 316   |
| 3    | STEM           | 1    | A276 316   |
| 4    | GASKET         | 1    | 304+Graphite   |
| 5    | BONNET BOLT    | 4    | A193 B8M   |
| 6    | BONNET         | 1    | A182-F316  |
| 7    | PACKING        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 8    | GLAND BOLT     | 2    | A276 316   |
| 9    | GLAND BOLT PIN | 2    | A276 316   |
| 10   | PACKING FLANGE | 1    | A276 420   |
| 11   | GLAND FLANGE   | 1    | WCB  |
| 12   | NUT            | 2    | A194 8M  |
| 13   | STEM NUT       | 1    | A276 410   |
| 14   | WASHER         | 2    | A276 410   |
| 15   | NAME PLATE     | 1    | STAINLESS STEEL  |
| 16   | HAND WHEEL NUT | 1    | A108 1020  |
| 17   | HAND WHEEL     | 1    | A197   |



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TITLE: FORGED STAINLESS STEEL BOLTED BONNET RF GLOBE VALVE - CLASS 300 - API TRIM 12 - INTEGRAL FLANGES

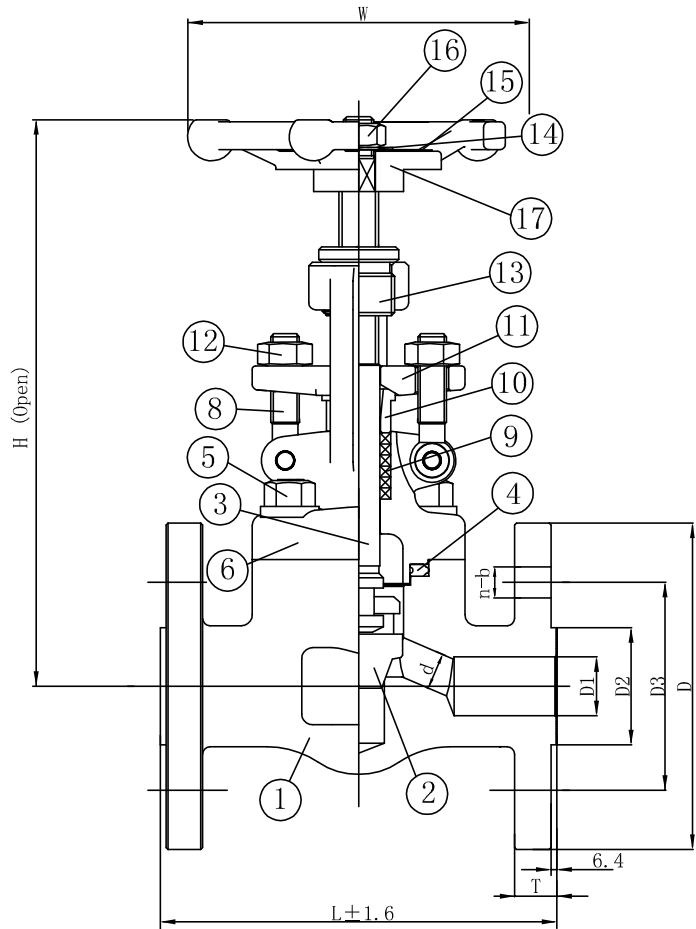
|     |      |             |       |       |                |             |                            |                |                          |               |                     |
|-----|------|-------------|-------|-------|----------------|-------------|----------------------------|----------------|--------------------------|---------------|---------------------|
|     |      |             |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: API 598 | MATERIAL: F316 | UNITS: Inch, mm          |               |                     |
|     |      |             |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL HYDRO 1100PSI        | CLASS: 300     | DATE: 01/01/12           | SCALE: N.T.S. |                     |
|     |      |             |       |       | FACE TO FACE   | ANSI B16.10 | SEAT AIR 80PSI             | SIZE: 1/2 - 2" | FIG. No.: FS302F-62N 316 |               |                     |
|     |      |             |       |       | WALL THICKNESS | BS1868      | BACK SEAT HYDRO 800PSI     | DRAWN BY: F.J. |                          |               |                     |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D          | DESIGNED    | API 602                    | NACE MR 0175   | CHK'D & APR'D BY: R.P.   | REV: 1        | DWG No.: 50GL120023 |

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# Wm. E. Williams No. FS602F62N 316 Class 600 RF OS&Y BB Globe Valve F316 (API Trim 12) NACE

| VALVE SIZE |        | L   | d   | D1  | D2    | D3    | D    | T  | n-b   | H   | W   |
|------------|--------|-----|-----|-----|-------|-------|------|----|-------|-----|-----|
| DN         | IN     |     |     |     |       |       |      |    |       |     |     |
| 15         | 1/2"   | 165 | ∅10 | ∅16 | ∅35   | ∅67   | ∅95  | 15 | 4-∅16 | 190 | 100 |
| 20         | 3/4"   | 190 | ∅13 | ∅21 | ∅43   | ∅83   | ∅115 | 16 | 4-∅20 | 195 | 100 |
| 25         | 1"     | 216 | ∅18 | ∅27 | ∅51   | ∅89   | ∅125 | 18 | 4-∅20 | 230 | 125 |
| 32         | 1-1/4" | 229 | ∅18 | ∅32 | ∅63.5 | ∅98.5 | ∅133 | 21 | 4-∅20 | 245 | 160 |
| 40         | 1-1/2" | 241 | ∅29 | ∅41 | ∅73   | ∅114  | ∅155 | 23 | 4-∅22 | 262 | 160 |
| 50         | 2"     | 292 | ∅35 | ∅53 | ∅92   | ∅127  | ∅165 | 26 | 8-∅20 | 300 | 180 |



| Item | Part Name      | Qty  | Material   |
|------|----------------|------|--|
| 1    | BODY           | 1    | A182-F316 + HF   |
| 2    | DISC           | 1    | A276 316   |
| 3    | STEM           | 1    | A276 316   |
| 4    | GASKET         | 1    | 304+Graphite   |
| 5    | BONNET BOLT    | 4    | A193 B8M   |
| 6    | BONNET         | 1    | A182-F316  |
| 7    | PACKING        | 1Set | GRAPHITE WITH CORROSION INHIBITOR AND DIE FORMED RINGS |
| 8    | GLAND BOLT     | 2    | A276 316   |
| 9    | GLAND BOLT PIN | 2    | A276 316   |
| 10   | PACKING FLANGE | 1    | A276 420   |
| 11   | GLAND FLANGE   | 1    | WCB  |
| 12   | NUT            | 2    | A194 8M  |
| 13   | STEM NUT       | 1    | A276 410   |
| 14   | WASHER         | 2    | A276 410   |
| 15   | NAME PLATE     | 1    | STAINLESS STEEL  |
| 16   | HAND WHEEL NUT | 1    | A108 1020  |
| 17   | HAND WHEEL     | 1    | A197   |


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TITLE: FORGED STAINLESS STEEL BOLTED BONNET RF GLOBE VALVE - CLASS 600 - API TRIM 12 - INTEGRAL FLANGES

|     |      |             |       |       |       |                |             |                            |       |         |                        |                          |                     |
|-----|------|-------------|-------|-------|-------|----------------|-------------|----------------------------|-------|---------|------------------------|--------------------------|---------------------|
|     |      |             |       |       |       | MARKING SYSTEM | MSS-SP-25   | INSPECTION & TEST: API 598 |       |         | MATERIAL: F316         | UNITS: Inch, mm          |                     |
|     |      |             |       |       |       | DIM. OF FLANGE | ANSI B16.5  | SHELL                      | HYDRO | 2175PSI | CLASS: 600             | DATE: 01/01/12           | SCALE: N.T.S.       |
|     |      |             |       |       |       | FACE TO FACE   | ANSI B16.10 | SEAT                       | AIR   | 80PSI   | SIZE: 1/2 - 2"         | FIG. No.: FS602F-62N 316 |                     |
|     |      |             |       |       |       | WALL THICKNESS | BS1868      | BACK SEAT                  | HYDRO | 1600PSI | DRAWN BY: F.J.         |                          |                     |
| NO. | DATE | DESCRIPTION | PRP'D | REV'D | APP'D | DESIGNED       | API 602     | NACE MR 0175               |       |         | CHK'D & APR'D BY: R.P. | REV: 1                   | DWG No.: 50GL120039 |

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