



## **Diaphragm Seal & Capillary Selection Guide**



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## BASE MODEL

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## Applications & Features

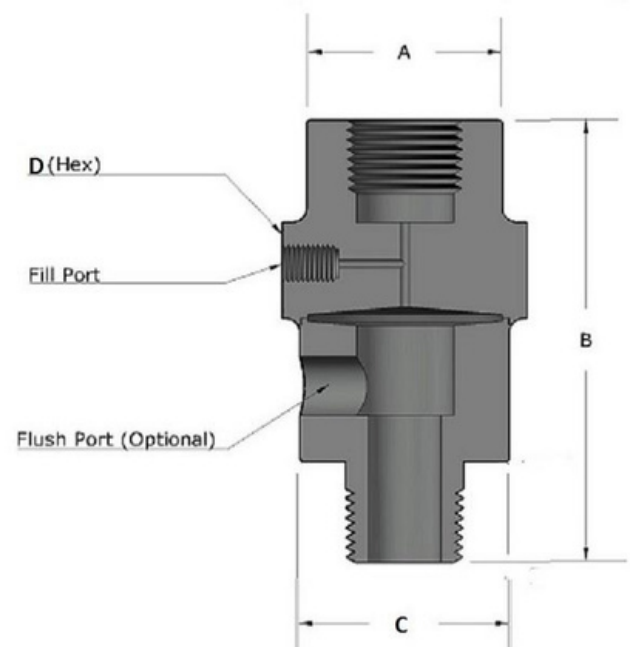
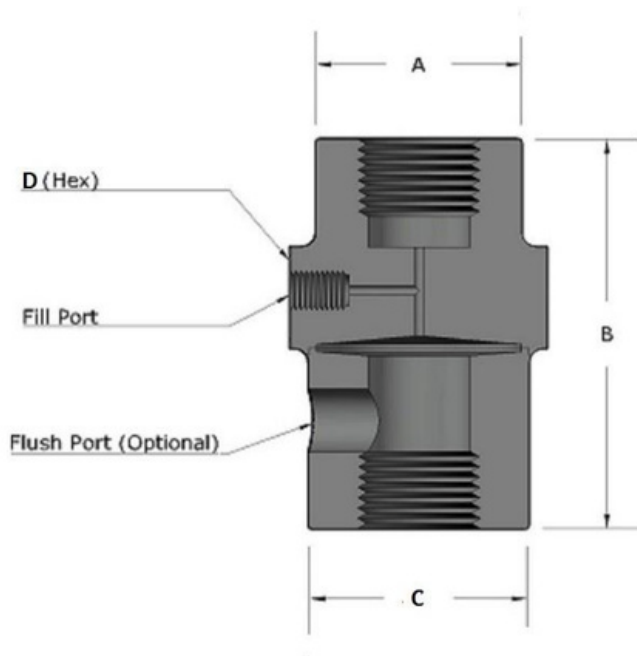
- Small threaded seal for off-line process connections
- All welded construction, no gasket, no Bolting
- Male or female NPT process connection
- Economical low-cost design



## Ordering Information

| Base Model              |              |                                                         |
|-------------------------|--------------|---------------------------------------------------------|
|                         | <b>HMT-</b>  | All Welded Threaded Mini Seal                           |
| Size                    |              |                                                         |
|                         | <b>1</b>     | 1.5" Diaphragm 2000 PSI (Standard)                      |
|                         | <b>2</b>     | 2.0" Diaphragm 1000 PSI (Standard)                      |
|                         | <b>3</b>     | 1.5" Diaphragm (High Pressure) 5000 PSI                 |
| Inst. Connection        |              |                                                         |
|                         | <b>W</b>     | Weld Connection                                         |
|                         | <b>2</b>     | 1/4" NPT                                                |
|                         | <b>4</b>     | 1/2" NPT                                                |
| Upper Material          |              |                                                         |
|                         | <b>S6</b>    | 316 / 316LSS                                            |
|                         | <b>M4</b>    | Monel 400 (Required with Monel diaphragm/lower)         |
|                         | <b>TI</b>    | Titanium (Required with Titanium diaphragm/lower)       |
|                         | <b>Z7</b>    | Zirconium 702 (Required with Zirconium diaphragm/lower) |
| Process Connection Size |              |                                                         |
|                         | <b>2</b>     | 1/4" NPT                                                |
|                         | <b>4</b>     | 1/2" NPT                                                |
|                         | <b>5</b>     | 3/4" NPT (Size 2 Only)                                  |
|                         | <b>6</b>     | 1.0" NPT (Size 2 Only)                                  |
| Process Connection Type |              |                                                         |
|                         | <b>F</b>     | Female                                                  |
|                         | <b>M</b>     | Male                                                    |
| Lower Material          |              |                                                         |
|                         | <b>S6</b>    | 316 / 316LSS                                            |
|                         | <b>S4</b>    | 304SS                                                   |
|                         | <b>S1</b>    | 321SS                                                   |
|                         | <b>S7</b>    | 347SS                                                   |
|                         | <b>C2</b>    | Alloy 20                                                |
|                         | <b>HC</b>    | Alloy C-276                                             |
|                         | <b>HB</b>    | Alloy B-3                                               |
|                         | <b>M4 I6</b> | Monel 400                                               |
|                         | <b>DP</b>    | Alloy 600                                               |
|                         |              | Alloy 2205                                              |

|                                          |                                     |                                                              |
|------------------------------------------|-------------------------------------|--------------------------------------------------------------|
|                                          | <b>NI</b>                           | Nickel 200                                                   |
|                                          | <b>TI</b>                           | Titanium                                                     |
|                                          | <b>Z7</b>                           | Zirconium 702                                                |
| <b>Flushing Connection</b>               |                                     |                                                              |
|                                          | <b>N</b>                            | None                                                         |
|                                          | <b>CONTINUED ON NEXT PAGE</b>       |                                                              |
|                                          | <b>CONTINUED FROM PREVIOUS PAGE</b> |                                                              |
|                                          | <b>A</b>                            | Single 1/4" NPTF                                             |
|                                          | <b>B</b>                            | Dual 1/4" NPTF                                               |
| <b>Diaphragm Material</b>                |                                     |                                                              |
|                                          | <b>S6</b>                           | 316 / 316LSS                                                 |
|                                          | <b>S4</b>                           | 304/304L                                                     |
|                                          | <b>S1</b>                           | 321SS                                                        |
| <b>ALWAYS MATCHES<br/>LOWER MATERIAL</b> | <b>S7</b>                           | 347SS                                                        |
|                                          | <b>C2</b>                           | Alloy 20                                                     |
|                                          | <b>HC</b>                           | Alloy C-276                                                  |
|                                          | <b>HB</b>                           | Alloy B-3                                                    |
|                                          | <b>M4</b>                           | Monel 400                                                    |
|                                          | <b>I6</b>                           | Alloy 600                                                    |
|                                          | <b>DP</b>                           | Alloy 2205                                                   |
|                                          | <b>NI</b>                           | Nickel 200                                                   |
|                                          | <b>TI</b>                           | Titanium                                                     |
|                                          | <b>Z7</b>                           | Zirconium 702                                                |
| <b>Options</b>                           |                                     |                                                              |
|                                          | <b>/P1</b>                          | Single 1/4" NPT plug for flush port (Material same as lower) |
|                                          | <b>/P2</b>                          | Dual 1/4" NPT plugs for flush port (Material same as lower)  |
|                                          | <b>/MC</b>                          | Material cert with MTRs                                      |



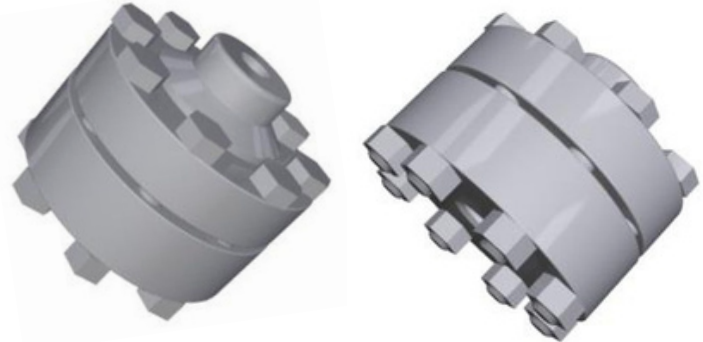
# HMT Dimensional Information

| 1.5" Diaphragm 2000 PSI MWP |            |       |       |       |       |
|-----------------------------|------------|-------|-------|-------|-------|
| Process Conn.               | Flush Port | A     | B     | C     | D     |
| 1/4"NPTF                    | None       | 1.40" | 2.20" | 1.50" | 1.75" |
|                             | 1/4"       | 1.40" | 2.70" | 1.50" | 1.75" |
| 1/2"NPTF                    | None       | 1.40" | 2.20" | 1.50" | 1.75" |
|                             | 1/4"       | 1.40" | 2.70" | 1.50" | 1.75" |
| 3/4"NPTF                    | None       | 1.40" | 2.20" | 1.50" | 1.75" |
|                             | 1/4"       | 1.40" | 2.70" | 1.50" | 1.75" |
|                             |            |       |       |       |       |
| 1/4"NPTM                    | None       | 1.40" | 2.80" | 1.50" | 1.75" |
|                             | 1/4"       | 1.40" | 3.30" | 1.50" | 1.75" |
| 1/2"NPTM                    | None       | 1.40" | 2.93" | 1.50" | 1.75" |
|                             | 1/4"       | 1.40" | 3.43" | 1.50" | 1.75" |
| 3/4"NPTM                    | None       | 1.40" | 2.95" | 1.50" | 1.75" |
|                             | 1/4"       | 1.40" | 3.45" | 1.50" | 1.75" |
|                             |            |       |       |       |       |
|                             |            |       |       |       |       |

| 2.0" Diaphragm 1000 PSI MWP |            |       |       |       |       |
|-----------------------------|------------|-------|-------|-------|-------|
| Process Conn.               | Flush Port | A     | B     | C     | D     |
| 1/4" NPTF                   | None       | 1.90" | 2.20" | 2.00" | 2.25" |
|                             | 1/4"       | 1.90" | 2.70" | 2.00" | 2.25" |
| 1/2" NPTF                   | None       | 1.90" | 2.20" | 2.00" | 2.25" |
|                             | 1/4"       | 1.90" | 2.70" | 2.00" | 2.25" |
| 3/4" NPTF                   | None       | 1.90" | 2.20" | 2.00" | 2.25" |
|                             | 1/4"       | 1.90" | 2.70" | 2.00" | 2.25" |
| 1.0" NPTF                   | None       | 1.90" | 2.20" | 2.00" | 2.25" |
|                             | 1/4"       | 1.90" | 2.70" | 2.00" | 2.25" |
| 1/4" NPTM                   | None       | 1.90" | 2.80" | 2.00" | 2.25" |
|                             | 1/4"       | 1.90" | 3.30" | 2.00" | 2.25" |
| 1/2" NPTM                   | None       | 1.90" | 2.93" | 2.00" | 2.25" |
|                             | 1/4"       | 1.90" | 3.43" | 2.00" | 2.25" |
| 3/4" NPTM                   | None       | 1.90" | 2.95" | 2.00" | 2.25" |
|                             | 1/4"       | 1.90" | 3.45" | 2.00" | 2.25" |
| 1.0"NPTM                    | None       | 1.90" | 3.08" | 2.00" | 2.25" |
|                             | 1/4"       | 1.90" | 3.58" | 2.00" | 2.25" |

## Applications & Features

- Standard threaded Seal for off-line process connections.
- 3 sizes to fit various applications
- Standard pressure ratings to 1500 PSI and 2500 PSI,
- Higher pressure ratings available
- Male or female NPT process connection

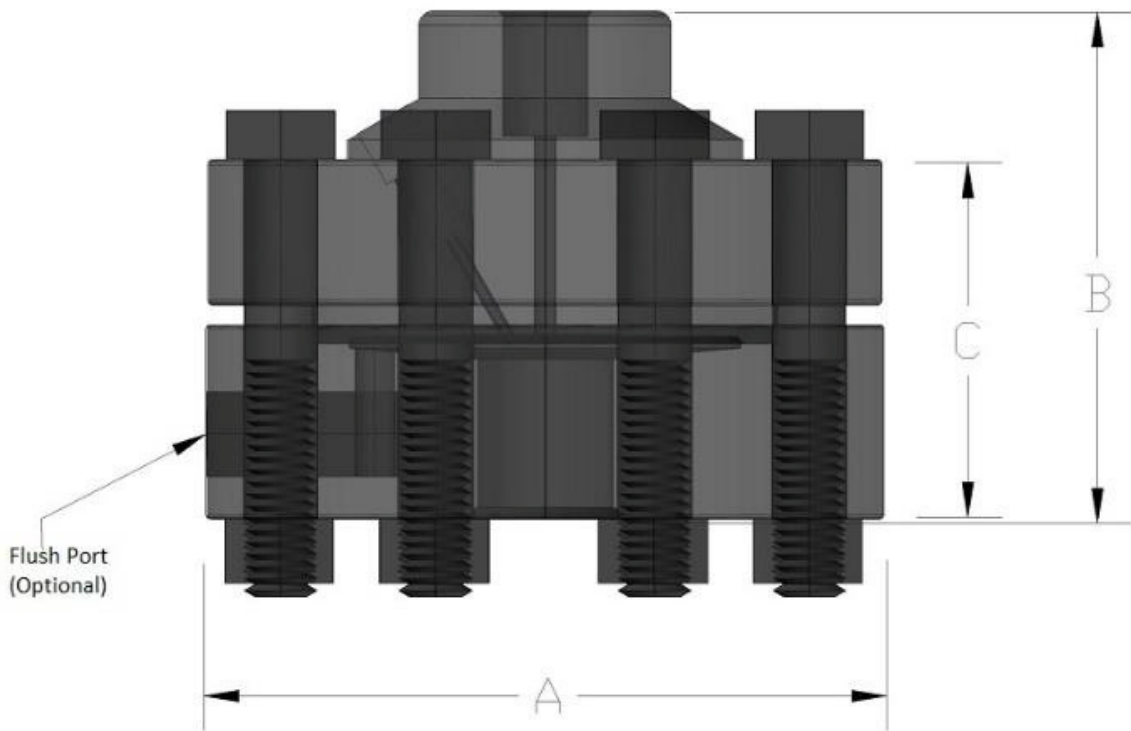


## Ordering Information

| Base Model              |      |                                                              |
|-------------------------|------|--------------------------------------------------------------|
|                         | HTH- | Threaded Seal                                                |
| Size                    |      |                                                              |
|                         | 2    | 2.4" Diaphragm 2500 PSI (Standard)                           |
|                         | 3    | 2.9" Diaphragm 2500 PSI (Standard)                           |
|                         | 4    | 4.1" Diaphragm 1500 PSI (Standard)                           |
|                         | 5    | 2.4" Diaphragm 5000 PSI                                      |
|                         | 6    | 2.9" Diaphragm 5000 PSI                                      |
|                         | 7    | 4.1" Diaphragm 4000 PSI                                      |
|                         | 8    | 2.4" Diaphragm 10000 PSI                                     |
| Inst. Connection        |      |                                                              |
|                         | W    | Weld Connection                                              |
|                         | 2    | (8mm) 1/4" NPT                                               |
|                         | 4    | 1/2" NPT                                                     |
| Upper Material          |      |                                                              |
|                         | S6   | 316/316L                                                     |
|                         | HC   | Hastelloy C276                                               |
|                         | TI   | Titanium (Required with Titanium diaphragm over 300°F)       |
|                         | Z7   | Zirconium 702 (Required with Zirconium diaphragm over 300°F) |
| Process Connection Size |      |                                                              |
|                         | 2    | 1/4" NPT                                                     |
|                         | 4    | 1/2" NPT                                                     |
|                         | 5    | 3/4" NPT                                                     |
|                         | 6    | 1.0" NPT                                                     |
|                         | 7    | 1-1/4" NPT                                                   |
|                         | 8    | 1-1/2" NPT                                                   |
| Process Connection Type |      |                                                              |
|                         | F    | Female                                                       |
|                         | M    | Male                                                         |
| Lower Material          |      |                                                              |
|                         | S6   | 316 / 316LSS                                                 |
|                         | S4   | 304 / 304LSS                                                 |
|                         | CS   | Carbon Steel Nickel Plated                                   |
|                         | C2   | Alloy 20                                                     |
|                         |      | CONTINUED ON NEXT PAGE                                       |

|                            |           |                                         |                             |
|----------------------------|-----------|-----------------------------------------|-----------------------------|
|                            |           | <b>CONTINUED FROM PREVIOUS PAGE</b>     |                             |
|                            | <b>HC</b> | Alloy C-276                             |                             |
|                            | <b>HB</b> | Alloy B-3                               |                             |
|                            | <b>M4</b> | Alloy 400                               |                             |
|                            | <b>I6</b> | Alloy 600                               |                             |
|                            | <b>DP</b> | Alloy 2205                              |                             |
|                            | <b>NI</b> | Nickel 200                              |                             |
|                            | <b>TI</b> | Titanium                                |                             |
|                            | <b>Z7</b> | Zirconium 702                           |                             |
|                            | <b>TF</b> | PTFE w/ SST support ring                | (200 PSI MWP)               |
| <b>Flushing Connection</b> |           |                                         |                             |
|                            | <b>N</b>  | None                                    |                             |
|                            | <b>A</b>  | Single 1/4" NPTF                        |                             |
|                            | <b>B</b>  | Dual 1/4" NPTF                          |                             |
|                            | <b>C</b>  | Single 1/2" NPTF                        | Size 3 & 4 Only             |
|                            | <b>D</b>  | Dual 1/2" NPTF                          | Size 3 & 4 Only             |
|                            | <b>E</b>  | Single 1/4" Pipe Socket Weld            |                             |
|                            | <b>F</b>  | Dual 1/4" Pipe Socket Weld              |                             |
|                            | <b>G</b>  | Single 1/2" Pipe Socket Weld            | Size 3 & 4 Only             |
|                            | <b>H</b>  | Dual 1/2" Pipe Socket Weld              | Size 3 & 4 Only             |
| <b>Diaphragm Material</b>  |           |                                         |                             |
|                            | <b>S6</b> | 316 / 316LSS                            |                             |
|                            | <b>S4</b> | 304 / 304LSS                            |                             |
|                            | <b>S1</b> | 321SS                                   |                             |
|                            | <b>S7</b> | 347SS                                   |                             |
|                            | <b>TA</b> | Tantalum                                |                             |
|                            | <b>C2</b> | Alloy 20                                |                             |
|                            | <b>HC</b> | Alloy C-276                             |                             |
|                            | <b>HB</b> | Alloy B3                                |                             |
|                            | <b>M4</b> | Monel 400                               |                             |
|                            | <b>I6</b> | Alloy 600                               |                             |
|                            | <b>DP</b> | Alloy 2205                              |                             |
|                            | <b>NI</b> | Nickel 201                              |                             |
|                            | <b>TI</b> | Titanium                                |                             |
|                            | <b>Z7</b> | Zirconium                               |                             |
|                            | <b>TF</b> | 702 PTFE                                |                             |
| <b>Gasket Material</b>     |           |                                         |                             |
|                            | <b>K4</b> | Klinger C4401 ( Standard)               | 450 F Max                   |
|                            | <b>GF</b> | Grafoil                                 | 700 F Max                   |
|                            | <b>GL</b> | Gylon 3510                              | 300F Max                    |
|                            | <b>TF</b> | PTFE (o-ring)                           | 350 F Max                   |
|                            | <b>VI</b> | Viton (o-ring)                          | 400 F Max                   |
|                            | <b>BN</b> | Buna-N (o-ring)                         | 250 F Max                   |
|                            | <b>KZ</b> | Kalrez (o-ring)                         | 500 F Max                   |
|                            | <b>NN</b> | None (Use with PTFE Lower or Diaphragm) |                             |
|                            | <b>TV</b> | FEP Encapsulated Viton (o-ring)         |                             |
|                            | <b>GY</b> | Gylon 3500                              | 500 F Max                   |
| <b>Bolting</b>             |           |                                         |                             |
|                            | <b>CS</b> | Grade 8 Zinc Plated                     | (Standard)                  |
|                            | <b>S7</b> | 17-4 PH SS                              | (Standard)                  |
|                            | <b>S4</b> | 304SS                                   | Reduces Pressure rating 50% |
|                            | <b>S6</b> | 316SS                                   | Reduces Pressure rating 50% |
|                            |           | <b>CONTINUED ON NEXT PAGE</b>           |                             |

| CONTINUED FROM PREVIOUS PAGE |     |                                         |                                                 |
|------------------------------|-----|-----------------------------------------|-------------------------------------------------|
| Options                      |     |                                         |                                                 |
|                              | /AU | Gold Plated 0.0003 (7.5 microns) Thick  | ASTM B488, TYPE III, GRADE A                    |
|                              | /A2 | Gold Plated 0.0007 (17.5 microns) Thick | ASTM B488, TYPE III, GRADE A                    |
|                              | /A4 | Gold Plated 0.001 (25 microns) Thick    | ASTM B488, TYPE III, GRADE A                    |
|                              | /NS | PTFE Coated Diaphragm                   | (Non-Stick Only - Not for corrosion protection) |
|                              | /P1 | With single pipe plug for flush port    | (Material same as lower )                       |
|                              | /P2 | With dual pipe plugs for flush port     | (Material same as lower)                        |
|                              | /MC | Material cert with MTRs                 |                                                 |

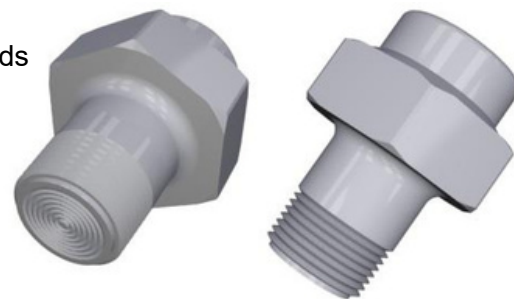


## HTH Threaded Off-Line Seal Dimensions

| Diaphragm Size | MWP        | Flush Port Size     | Bolts     | Bolt Size  | “A”   | “B”   | “C”   |
|----------------|------------|---------------------|-----------|------------|-------|-------|-------|
| 2.4”           | 2,500 PSI  | 1/4 NPT or NO FLUSH | 8         | 5/16-24 NF | 3.48” | 2.68” | 1.85” |
|                |            |                     |           |            |       |       |       |
|                | 5,000 PSI  | 1/4 NPT or NO FLUSH | 8         | 7/16-20 NF | 4.00” | 3.06” | 2.30  |
|                |            | ½ NPT               | 8         | 7/16-20 NF | 4.00” | 3.39” | 2.63” |
|                |            |                     |           |            |       |       |       |
|                | 10,000 PSI | 1/4 NPT or NO FLUSH | 8         | 1/2-20 NF  | 4.00” | 3.46” | 2.70” |
| ½ NPT          |            | 8                   | 1/2-20 NF | 4.00”      | 3.79” | 3.03” |       |
|                |            |                     |           |            |       |       |       |
| 2.9”           | 2,500 PSI  | 1/4 NPT or NO FLUSH | 8         | 3/8-24 NF  | 4.00” | 2.61” | 1.85” |
|                |            | ½ NPT               | 8         | 3/8-24 NF  | 4.00” | 2.94” | 2.18” |
|                |            |                     |           |            |       |       |       |
|                | 5,000 PSI  | 1/4 NPT or NO FLUSH | 8         | 1/2-20 NF  | 4.48” | 3.06  | 2.30” |
|                |            | ½ NPT               | 8         | 1/2-20 NF  | 4.48” | 3.37” | 2.63” |
|                |            |                     |           |            |       |       |       |
|                |            |                     |           |            |       |       |       |
| 4.1”           | 1,500 PSI  | 1/4 NPT or NO FLUSH | 8         | 3/8-24 NF  | 5.40” | 2.52” | 1.76” |
|                |            | ½ NPT               | 8         | 3/8-24 NF  | 5.40” | 2.85” | 2.09” |
|                |            |                     |           |            |       |       |       |
|                | 4,000 PSI  | 1/4 NPT or NO FLUSH | 8         | 5/8-18 NF  | 5.90” | 3.16” | 2.40” |
|                |            | ½ NPT               | 8         | 5/8-18 NF  | 5.90” | 3.49” | 2.73” |
|                |            |                     |           |            |       |       |       |
|                |            |                     |           |            |       |       |       |

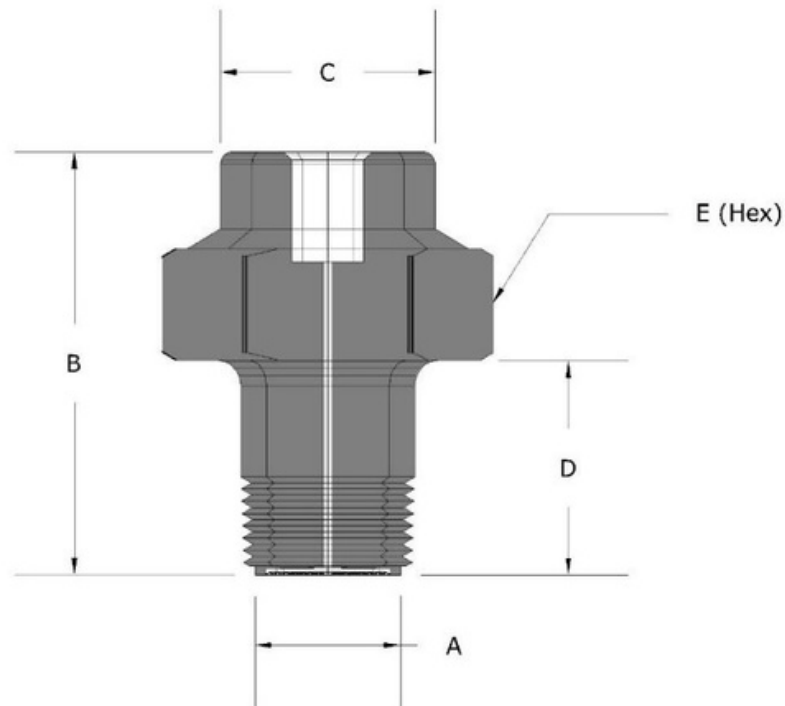
## Applications & Features

- Male NPT threaded body with flush diaphragm at the end of threads
- Suitable for pressures up to 9000 PSI depending on size
- Sizes from 3/4" NPT to 2" NPT



## Ordering Information

| Base Model                |            |                                         |                                                 |
|---------------------------|------------|-----------------------------------------|-------------------------------------------------|
|                           | <b>HFT</b> | Threaded Flush Diaphragm                |                                                 |
| Size                      |            |                                         |                                                 |
|                           | <b>A</b>   | 3/4" NPT Flush Male Connection          | 9000 PSI MWP 316SS                              |
|                           | <b>B</b>   | 1" NPT Flush Male Connection            | 9000 PSI MWP 316SS                              |
|                           | <b>C</b>   | 1-1/2" NPT Flush Male Connection        | 6000 PSI MWP 316SS                              |
|                           | <b>D</b>   | 2" NPT Flush Male Connection            | 4000 PSI MWP 316SS                              |
|                           | <b>M</b>   | G3/4" (BSPP)                            | 9000 PSI MWP 316SS                              |
|                           | <b>N</b>   | G1.0" (BSPP)                            | 9000 PSI MWP 316SS                              |
|                           | <b>P</b>   | G1.5" (BSPP)                            | 6000 PSI MWP 316SS                              |
|                           | <b>R</b>   | G2.0" (BSPP)                            | 4000 PSI MWP 316SS                              |
| (NON CATALOG ITEM)        | <b>E</b>   | 1/2" NPT Flush Male Conn.               | 9000 PSI MWP 316SS                              |
| (NON CATALOG ITEM)        | <b>F</b>   | 1-1/4" NPT Flush Male Conn.             | 6000 PSI MWP 316SS                              |
| (NON CATALOG ITEM)        | <b>L</b>   | 1" G1B w/ o-Rings (Special Hygenic)     | 580 PSI MWP 316SS                               |
| Instrument Connection     |            |                                         |                                                 |
|                           | <b>W</b>   | Weld Connection                         | (Not available with Titanium or Zirconium)      |
|                           | <b>2</b>   | 1/4" NPT                                |                                                 |
|                           | <b>4</b>   | 1/2" NPT                                |                                                 |
| Body & Diaphragm Material |            |                                         |                                                 |
|                           | <b>S6</b>  | 316 / 316LSS                            |                                                 |
|                           | <b>S4</b>  | 304 / 304LSS                            |                                                 |
|                           | <b>S1</b>  | 321SS                                   |                                                 |
|                           | <b>S7</b>  | 347SS                                   |                                                 |
|                           | <b>C2</b>  | Alloy 20                                |                                                 |
|                           | <b>HC</b>  | Alloy C-276                             |                                                 |
|                           | <b>HB</b>  | Alloy B-3                               |                                                 |
|                           | <b>M4</b>  | Monel 400                               |                                                 |
|                           | <b>I6</b>  | Alloy 600                               |                                                 |
|                           | <b>DP</b>  | Alloy 2205                              |                                                 |
|                           | <b>NI</b>  | Nickel 200                              |                                                 |
|                           | <b>TI</b>  | Titanium                                |                                                 |
|                           | <b>Z7</b>  | Zirconium 702                           |                                                 |
|                           | <b>SC</b>  | 316SS Body / C-276 Diaphragm            |                                                 |
| Options                   |            |                                         |                                                 |
|                           | <b>/AU</b> | Gold Plated 0.0003 (7.5 microns) Thick  | ASTM B488, TYPE III, GRADE A                    |
|                           | <b>/A2</b> | Gold Plated 0.0007 (17.5 microns) Thick | ASTM B488, TYPE III, GRADE A                    |
|                           | <b>/A4</b> | Gold Plated 0.001 (25 microns) Thick    | ASTM B488, TYPE III, GRADE A                    |
|                           | <b>/NS</b> | PTFE Coated Diaphragm                   | (Non-Stick Only - Not for corrosion protection) |
|                           | <b>/MC</b> | Material cert with MTRs                 |                                                 |



## HFT Dimensions

| Size      | "A"<br>Diaph. Size | "B"   | "C"   | "D"   | "E"<br>Hex Size |
|-----------|--------------------|-------|-------|-------|-----------------|
| 3/4" NPTM | 0.88"              | 2.50" | 1.30" | 1.25" | 1.75"           |
| 1" NPTM   | 1.16"              | 2.50" | 1.30" | 1.25" | 1.75"           |
| 1.5" NPTM | 1.75"              | 2.70" | 1.30" | 1.25" | 2.50"           |
| 2" NPTM   | 2.08"              | 2.70" | 1.30" | 1.25" | 2.50"           |

## Applications & Features

- Flanged Seal with recessed diaphragm for Off-Line process connection
- 3 Sizes to fit various applications
- Standard flange sizes from ANSI ½" to 3".
- Standard flange ratings from ANSI Class 150 to 600, Extended rating to ANSI Class 1500
- Other flange standards available



## Ordering Information

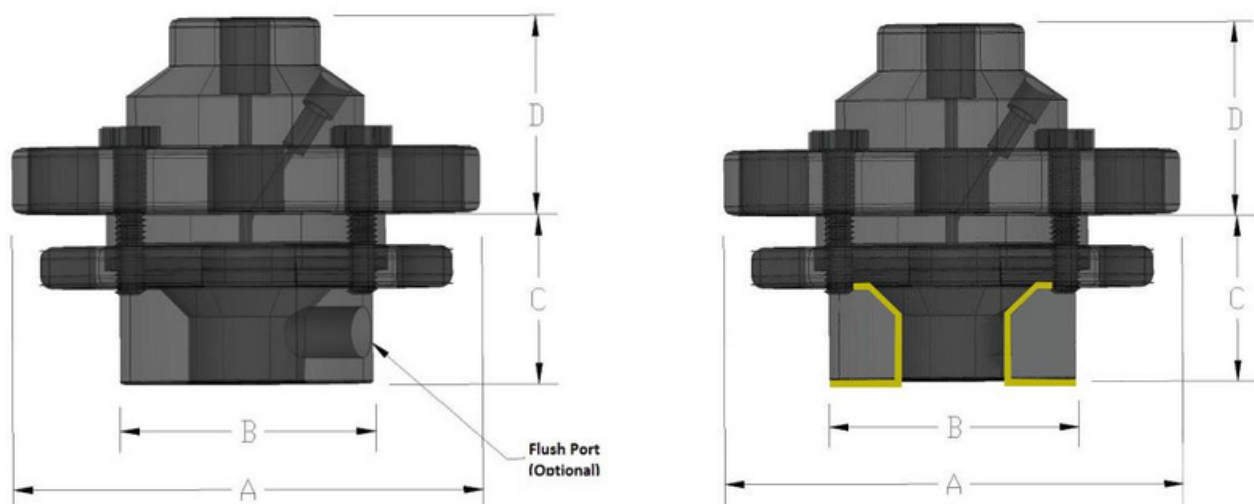
| Base Model                | HFL | Flanged Off-Line       |                                            |
|---------------------------|-----|------------------------|--------------------------------------------|
| Size                      | 2   | 2.4" Diaphragm         | ANSI Raised Face (RF)                      |
|                           | 3   | 2.9" Diaphragm         | ANSI Raised Face (RF)                      |
|                           | 4   | 4.1" Diaphragm         | ANSI Raised Face (RF)                      |
|                           | 5   | 2.4" Diaphragm         | Ring Type Joint (RTJ)                      |
|                           | 6   | 2.9" Diaphragm         | Ring Type Joint (RTJ)                      |
|                           | 7   | 4.1" Diaphragm         | Ring Type Joint (RTJ)                      |
| Inst. Connection          | W   | Weld Connection        | (Not available with Titanium or Zirconium) |
|                           | 2   | 1/4" NPT               |                                            |
|                           | 4   | 1/2" NPT               |                                            |
| Upper Material            | S6  | 316 / 316LSS           |                                            |
|                           | HC  | Hastelloy C276         |                                            |
|                           | TI  | Titanium               | (Required with Titanium diaphragm)         |
|                           | Z7  | Zirconium 702          | (Required with Zirconium diaphragm)        |
| Process Connection Size   | 05  | 1/2"                   |                                            |
|                           | 07  | 3/4"                   |                                            |
|                           | 10  | 1.0"                   |                                            |
|                           | 15  | 1.5"                   |                                            |
|                           | 20  | 2.0"                   |                                            |
|                           | 30  | 3.0"                   |                                            |
|                           | 40  | 4.0"                   |                                            |
| Process Connection Rating | A   | 150#                   |                                            |
|                           | B   | 300#                   |                                            |
|                           | C   | 600#                   |                                            |
|                           |     | CONTINUED ON NEXT PAGE |                                            |

|                            |           |                                     |                                |
|----------------------------|-----------|-------------------------------------|--------------------------------|
|                            |           | <b>CONTINUED FROM PREVIOUS PAGE</b> |                                |
|                            | <b>D</b>  | 900#                                |                                |
|                            | <b>E</b>  | 1500#                               |                                |
| <b>Lower Material</b>      |           |                                     |                                |
|                            | <b>S6</b> | 316 / 316LSS                        |                                |
|                            | <b>S4</b> | 304 / 304LSS                        |                                |
|                            | <b>S1</b> | 321SS                               |                                |
|                            | <b>S7</b> | 347SS                               |                                |
|                            | <b>C2</b> | Alloy 20                            |                                |
|                            | <b>HC</b> | Alloy C-276                         |                                |
|                            | <b>HB</b> | Alloy B-3                           |                                |
|                            | <b>M4</b> | Monel 400                           |                                |
|                            | <b>I6</b> | Alloy 600                           |                                |
|                            | <b>DP</b> | Alloy 2205                          |                                |
|                            | <b>NI</b> | Nickel 200                          |                                |
|                            | <b>TI</b> | Titanium                            |                                |
|                            | <b>Z7</b> | Zirconium 702                       |                                |
|                            | <b>CS</b> | Carbon Steel                        |                                |
|                            | <b>TF</b> | 316SS PTFE Lined                    | Flush Connection Not Available |
|                            | <b>TA</b> | 316SS Tantalum Lined                | Flush Connection Not Available |
| <b>Flushing Connection</b> |           |                                     |                                |
|                            | <b>N</b>  | None                                |                                |
|                            | <b>A</b>  | Single 1/4" NPTF                    |                                |
|                            | <b>B</b>  | Dual 1/4" NPTF                      |                                |
|                            | <b>C</b>  | Single 1/2" NPTF                    | Size 3 & 4 Only                |
|                            | <b>D</b>  | Dual 1/2" NPTF                      | Size 3 & 4 Only                |
|                            | <b>E</b>  | Single 1/4" Pipe Socket Weld        |                                |
|                            | <b>F</b>  | Dual 1/4" Pipe Socket Weld          |                                |
|                            | <b>G</b>  | Single 1/2" Pipe Socket Weld        | Size 3 & 4 Only                |
|                            | <b>H</b>  | Dual 1/2" Pipe Socket Weld          | Size 3 & 4 Only                |
| <b>Diaphragm Material</b>  |           |                                     |                                |
|                            | <b>S6</b> | 316 / 316LSS                        |                                |
|                            | <b>S4</b> | 304 / 304LSS                        |                                |
|                            | <b>S1</b> | 321SS                               |                                |
|                            | <b>S7</b> | 347SS                               |                                |
|                            | <b>TA</b> | Tantalum                            |                                |
|                            | <b>C2</b> | Alloy 20                            |                                |
|                            | <b>HC</b> | Alloy C-276                         |                                |
|                            | <b>HB</b> | Alloy B-3                           |                                |
|                            | <b>M4</b> | Monel 400                           |                                |
|                            | <b>I6</b> | Alloy 600                           |                                |
|                            | <b>DP</b> | Alloy 2205                          |                                |
|                            | <b>NI</b> | Nickel 201 /200                     |                                |
|                            | <b>TI</b> | Titanium                            |                                |
|                            | <b>Z7</b> | Zirconium 702                       |                                |
|                            | <b>TF</b> | PTFE                                |                                |
| <b>Gasket Material</b>     |           |                                     |                                |
|                            | <b>K4</b> | Klinger C4401 (Standard)            | 450 F Max                      |
|                            | <b>GF</b> | Grafoil                             | 700 F Max                      |
|                            | <b>GL</b> | Gylon 3510                          | 300 F Max                      |
|                            | <b>TF</b> | PTFE (O-ring)                       | 350 F Max                      |
|                            | <b>VI</b> | Viton (O-ring)                      | 400 F Max                      |
|                            |           | <b>CONTINUED ON NEXT PAGE</b>       |                                |

|                |            |                                                                       |                             |
|----------------|------------|-----------------------------------------------------------------------|-----------------------------|
|                |            | <b>CONTINUED FROM PREVIOUS</b>                                        |                             |
|                | <b>BN</b>  | <b>PAGE</b> Buna-N (o-ring)                                           | 250 F Max                   |
|                | <b>KZ</b>  | Kalrez (O-ring)                                                       | 500 F Max                   |
|                | <b>NN</b>  | None (PTFE Lower)                                                     |                             |
|                | <b>TV</b>  | FEP Encapsulated Viton (O-ring)                                       |                             |
|                | <b>GY</b>  | Gylon 3500                                                            |                             |
|                |            |                                                                       |                             |
| <b>Bolting</b> |            |                                                                       |                             |
|                | <b>CS</b>  | Grade 8 Zinc Plated (Standard)                                        |                             |
|                | <b>S7</b>  | 17-4 PH SS                                                            |                             |
|                | <b>S4</b>  | 304SS                                                                 | Reduces Pressure rating 50% |
|                | <b>S6</b>  | 316SS                                                                 | Reduces Pressure rating 50% |
|                | <b>NN</b>  | None (used with /SR option)                                           |                             |
| <b>Options</b> |            |                                                                       |                             |
|                | <b>/AU</b> | Gold Plated 0.0003 (7.5 microns) Thick ASTM B488, TYPE III, GRADE A   |                             |
|                | <b>/A2</b> | Gold Plated 0.0007 (17.5 microns) Thick ASTM B488, TYPE III, GRADE A  |                             |
|                | <b>/A4</b> | Gold Plated 0.001 (25 microns) Thick ASTM B488, TYPE III, GRADE A     |                             |
|                | <b>/NS</b> | PTFE Coated Diaphragm (Non-Stick Only - Not for corrosion protection) |                             |
|                | <b>/P1</b> | With single pipe plug for flush port (Material same as lower )        |                             |
|                | <b>/P2</b> | With dual pipe plugs for flush port (Material same as lower)          |                             |
|                | <b>/MC</b> | Material cert with MTR's                                              |                             |

## Configuration A

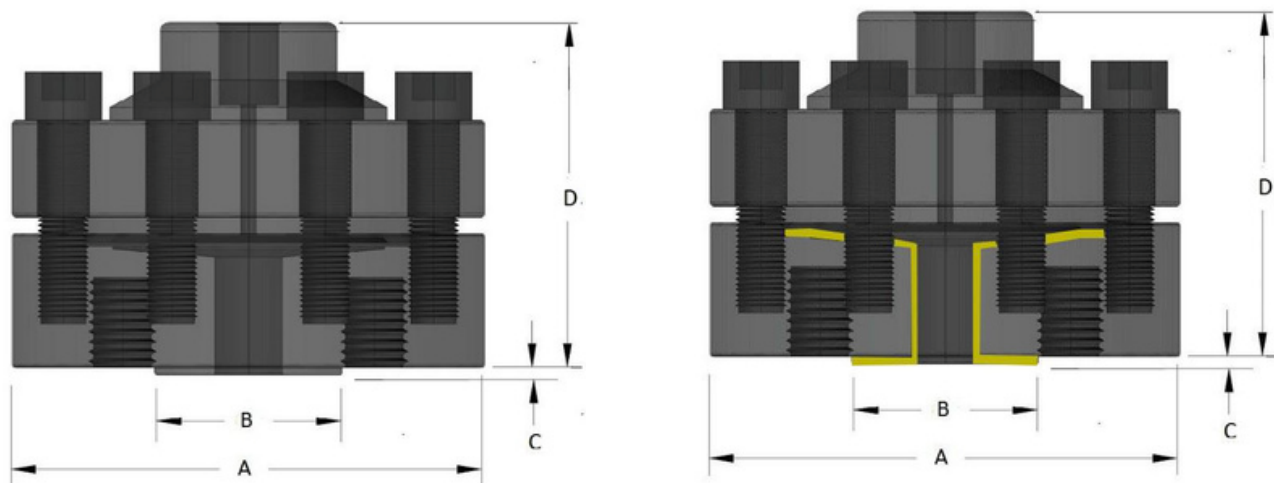
### Through Bolt Mounting



Shown with PTFE or Tantalum lining

## Configuration B

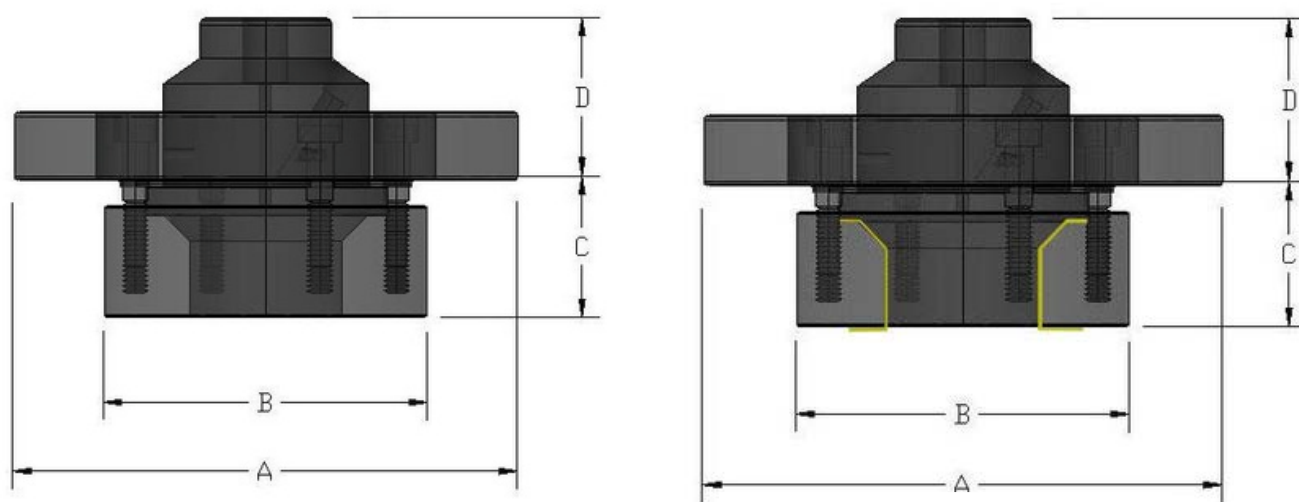
### Stud Bolt Mounting



Shown with PTFE or Tantalum lining

## Configuration C

### Through Bolt Mounting



Shown with PTFE or Tantalum lining

## HFL Dimensions 2.4" diaphragm

| Seal Type        | Flush Port Size  | Configuration Type | A      | B     | C     | D     | Bolt Quantity, Bolt Size, Bolt Circle Ø |
|------------------|------------------|--------------------|--------|-------|-------|-------|-----------------------------------------|
| 1/2"-150#        | None or 1/4" NPT | B                  | 3.48"  | 1.38" | .06   | 2.65" | (4X), 1/2-13nc, 2.38Øb.c.               |
|                  | 1/2" NPT         |                    |        |       |       | 2.98" |                                         |
| 3/4"-150#        | None or 1/4" NPT | B                  | 3.92"  | 1.69" | .06"  | 2.65" | (4X), 1/2-13nc, 2.75Øb.c.               |
|                  | 1/2" NPT         |                    |        |       |       | 2.98" |                                         |
| 1"-150#          | None or 1/4" NPT | A                  | 3.96"  | 2.17" | 1.37" | 1.66" | (4X), 1/2-13nc, 3.12Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.70" |       |                                         |
| 1-1/2"-150#      | None or 1/4" NPT | C                  | 5.00"  | 3.20" | 1.30" | 1.66" | (4X), 1/2-13nc, 3.12Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 2"-150#          | None or 1/4" NPT | C                  | 6.00"  | 3.92" | 1.30" | 1.66" | (4X), 5/8-11nc, 4.75Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 3"-150#          | None or 1/4" NPT | C                  | 7.50"  | 5.15" | 1.30" | 1.66" | (4X), 5/8-11nc, 6.00Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 4"-150#          | None or 1/4" NPT | C                  | 9.00"  | 6.20" | 1.30" | 1.66" | (8X), 5/8-11nc, 7.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 1/2"-300#        | None or 1/4" NPT | B                  | 3.75"  | 1.38" | .06"  | 2.65" | (4X), 1/2-13nc, 2.62Øb.c.               |
|                  | 1/2" NPT         |                    |        |       |       | 2.98" |                                         |
| 3/4"-300#        | None or 1/4" NPT | B                  | 4.62"  | 1.69" | .06"  | 2.65" | (4X), 5/8-11nc, 3.25Øb.c.               |
|                  | 1/2" NPT         |                    |        |       |       | 2.98" |                                         |
| 1"-300#          | None or 1/4" NPT | A                  | 4.88"  | 2.17" | 1.37" | 1.66" | (4X), 5/8-11nc, 3.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.70" |       |                                         |
| 1-1/2"-300#      | None or 1/4" NPT | C                  | 6.12"  | 3.20" | 1.30" | 1.66" | (4X), 3/4-10nc, 4.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 2"-300#          | None or 1/4" NPT | C                  | 6.50"  | 3.92" | 1.30" | 1.66" | (8X), 5/8-11nc, 5.00Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 3"-300#          | None or 1/4" NPT | C                  | 8.25"  | 5.15" | 1.30" | 1.66" | (8X), 3/4-10nc, 6.62Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 4"-300#          | None or 1/4" NPT | C                  | 10.00" | 6.20" | 1.30" | 2.66" | (8X), 3/4-10nc, 7.88Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 1/2"-600#        | None or 1/4" NPT | B                  | 3.75"  | 1.38" | .06"  | 2.65" | (4X), 1/2-13nc, 2.62Øb.c.               |
|                  | 1/2" NPT         |                    |        |       |       | 2.98" |                                         |
| 3/4"-600#        | None or 1/4" NPT | B                  | 4.62"  | 1.69" | .06"  | 2.65" | (4X), 5/8-11nc, 3.25Øb.c.               |
|                  | 1/2" NPT         |                    |        |       |       | 2.98" |                                         |
| 1"-600#          | None or 1/4" NPT | A                  | 4.88"  | 2.17" | 1.37" | 1.66" | (4X), 5/8-11nc, 3.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.70" |       |                                         |
| 1-1/2"-600#      | None or 1/4" NPT | C                  | 6.12"  | 3.20" | 1.30" | 1.66" | (4X), 3/4-10nc, 4.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 2"-600#          | None or 1/4" NPT | C                  | 6.50"  | 3.92" | 1.30" | 1.66" | (8X), 5/8-11nc, 5.00Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 3"-600#          | None or 1/4" NPT | C                  | 8.25"  | 5.15" | 1.30" | 2.66" | (8X), 3/4-10nc, 6.62Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 4"-600#          | None or 1/4" NPT | C                  | 10.75" | 6.20" | 1.30" | 2.66" | (8X), 3/4-10nc, 8.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 1/2"-900/1500#   | None or 1/4" NPT | B                  | 4.75"  | 1.58  | .06"  | 3.05" | (4X), 3/4-10nc, 3.25Øb.c.               |
|                  | 1/2" NPT         |                    |        |       |       | 3.38" |                                         |
| 3/4"-900/1500#   | None or 1/4" NPT | B                  | 5.12"  | 1.69" | .06"  | 3.05" | (4X), 3/4-10nc, 3.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |       |       | 3.38" |                                         |
| 1"-900/1500#     | None or 1/4" NPT | A                  | 5.88"  | 2.17" | 1.37" | 1.88" | (4X), 7/8-9nc, 4.00Øb.c.                |
|                  | 1/2" NPT         |                    |        |       | 1.70" |       |                                         |
| 1-1/2"-900/1500# | None or 1/4" NPT | C                  | 7.00"  | 3.20" | 1.30" | 2.66" | (4X), 1-8nc, 4.88Øb.c.                  |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 2"-900/1500#     | None or 1/4" NPT | C                  | 8.50"  | 3.92" | 1.70" | 2.66" | (8X), 7/8-9nc, 6.50Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       |       |                                         |
| 3"-900#          | None or 1/4" NPT | C                  | 9.50"  | 5.15" | 1.70" | 2.66" | (8X), 7/8-9nc, 7.50Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       |       |                                         |
| 4"-900#          | None or 1/4" NPT | C                  | 11.50" | 6.20" | 1.95" | 2.66" | (8X)1-1/8-7nc, 9.25Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       |       |                                         |
| 3"-1500#         | None or 1/4" NPT | C                  | 10.50" | 5.15" | 2.08" | 2.66" | (8X), 1.1/8-7nc, 8.00Øb.c.              |
|                  | 1/2" NPT         |                    |        |       |       |       |                                         |
| 4"-1500#         | None or 1/4" NPT | C                  | 12.25" | 6.20" | 2.32" | 3.31" | (8X), 1.1/4-7nc, 9.50Øb.c.              |
|                  | 1/2" NPT         |                    |        |       |       |       |                                         |

## HFL Dimensions 2.9" diaphragm

| Seal Type        | Flush Port Size  | Configuration Type | A      | B      | C     | D     | Bolt Quantity, Bolt Size, Bolt Circle Ø |
|------------------|------------------|--------------------|--------|--------|-------|-------|-----------------------------------------|
| 1/2"-150#        | None or 1/4" NPT | B                  | 4.48"  | 1.385" | .06"  | 2.65" | (4X), 1/2-13nc, 2.38Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 2.98" |                                         |
| 3/4"-150#        | None or 1/4" NPT | B                  | 4.48"  | 1.69"  | .06"  | 2.65" | (4X), 1/2-13nc, 2.75Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 2.98" |                                         |
| 1"-150#          | None or 1/4" NPT | B                  | 4.48"  | 2.00"  | .06"  | 2.65" | (4X), 1/2-13nc, 3.12Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 2.98" |                                         |
| 1-1/2"-150#      | None or 1/4" NPT | B                  | 5.00"  | 2.88"  | .06"  | 2.65" | (4X), 1/2-13nc, 3.12Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 2.98" |                                         |
| 2"-150#          | None or 1/4" NPT | C                  | 6.00"  | 3.92"  | 1.30" | 1.66" | (4X), 5/8-11nc, 4.75Øb.c.               |
|                  | 1/2" NPT         |                    |        |        | 1.63" |       |                                         |
| 3"-150#          | None or 1/4" NPT | C                  | 7.50"  | 5.15"  | 1.30" | 1.66" | (4X), 5/8-11nc, 6.00Øb.c.               |
|                  | 1/2" NPT         |                    |        |        | 1.63" |       |                                         |
| 4"-150#          | None or 1/4" NPT | C                  | 9.00"  | 6.20"  | 1.30" | 1.66" | (8X), 5/8-11nc, 7.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |        | 1.63" |       |                                         |
| 1/2"-300#        | None or 1/4" NPT | B                  | 4.48"  | 1.38"  | .06"  | 2.65" | (4X), 1/2-13nc, 2.62Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 2.98" |                                         |
| 3/4"-300#        | None or 1/4" NPT | B                  | 4.62"  | 1.69"  | .06"  | 2.65" | (4X), 5/8-11nc, 3.25Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 2.98" |                                         |
| 1"-300#          | None or 1/4" NPT | B                  | 4.88"  | 2.00"  | .06"  | 2.65" | (4X), 5/8-11nc, 3.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 2.98" |                                         |
| 1-1/2"-300#      | None or 1/4" NPT | B                  | 6.12"  | 2.88"  | .06"  | 2.65" | (4X), 3/4-10nc, 4.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 2.98" |                                         |
| 2"-300#          | None or 1/4" NPT | C                  | 6.50"  | 3.92"  | 1.30" | 1.66" | (8X), 5/8-11nc, 5.00Øb.c.               |
|                  | 1/2" NPT         |                    |        |        | 1.63" |       |                                         |
| 3"-300#          | None or 1/4" NPT | C                  | 8.25"  | 5.15"  | 1.30" | 1.66" | (8X), 3/4-10nc, 6.62Øb.c.               |
|                  | 1/2" NPT         |                    |        |        | 1.63" |       |                                         |
| 4"-300#          | None or 1/4" NPT | C                  | 10.00" | 6.20"  | 1.30" | 2.66" | (8X), 3/4-10nc, 7.88Øb.c.               |
|                  | 1/2" NPT         |                    |        |        | 1.63" |       |                                         |
| 1/2"-600#        | None or 1/4" NPT | B                  | 4.48"  | 1.38"  | .06"  | 2.65" | (4X), 1/2-13nc, 2.62Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 2.98" |                                         |
| 3/4"-600#        | None or 1/4" NPT | B                  | 4.62"  | 1.69"  | .06"  | 2.65" | (4X), 5/8-11nc, 3.25Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 2.98" |                                         |
| 1"-600#          | None or 1/4" NPT | B                  | 4.88"  | 2.00"  | .06"  | 2.65" | (4X), 5/8-11nc, 3.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 2.98" |                                         |
| 1-1/2"-600#      | None or 1/4" NPT | B                  | 6.12"  | 2.88"  | .06"  | 2.65" | (4X), 3/4-10nc, 4.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 2.98" |                                         |
| 2"-600#          | None or 1/4" NPT | C                  | 6.50"  | 3.92"  | 1.30" | 1.66" | (8X), 5/8-11nc, 5.00Øb.c.               |
|                  | 1/2" NPT         |                    |        |        | 1.63" |       |                                         |
| 3"-600#          | None or 1/4" NPT | C                  | 8.25"  | 5.15"  | 1.30" | 2.66" | (8X), 3/4-10nc, 6.62Øb.c.               |
|                  | 1/2" NPT         |                    |        |        | 1.63" |       |                                         |
| 4"-600#          | None or 1/4" NPT | C                  | 10.75" | 6.20"  | 1.70" | 2.66" | (8X), 3/4-10nc, 8.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       |       |                                         |
| 1/2"-900/1500#   | None or 1/4" NPT | B                  | 4.75"  | 1.38"  | .06"  | 3.05" | (4X), 3/4-10nc, 3.25Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 3.38" |                                         |
| 3/4"-900/1500#   | None or 1/4" NPT | B                  | 5.12"  | 1.69"  | .06"  | 3.05" | (4X), 3/4-10nc, 3.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       | 3.38" |                                         |
| 1"-900/1500#     | None or 1/4" NPT | B                  | 5.88"  | 2.00"  | .06"  | 3.05" | (4X), 7/8-9nc, 4.00Øb.c.                |
|                  | 1/2" NPT         |                    |        |        |       | 3.38" |                                         |
| 1-1/2"-900/1500# | None or 1/4" NPT | B                  | 7.00"  | 2.88"  | .06"  | 3.05" | (4X), 1-8nc, 4.88Øb.c.                  |
|                  | 1/2" NPT         |                    |        |        |       | 3.38" |                                         |
| 2"-900/1500#     | None or 1/4" NPT | C                  | 8.50"  | 3.92"  | 1.70" | 2.66" | (8X), 7/8-9nc, 6.50Øb.c.                |
|                  | 1/2" NPT         |                    |        |        |       |       |                                         |
| 3"-900#          | None or 1/4" NPT | C                  | 9.50"  | 5.15"  | 1.70" | 2.66" | (8X), 7/8-9nc, 7.50Øb.c.                |
|                  | 1/2" NPT         |                    |        |        |       |       |                                         |
| 4"-900#          | None or 1/4" NPT | C                  | 11.50" | 6.20"  | 1.95" | 2.66" | (8X) 1-1/8-7nc, 9.25Øb.c.               |
|                  | 1/2" NPT         |                    |        |        |       |       |                                         |
| 3"-1500#         | None or 1/4" NPT | C                  | 10.50" | 5.15"  | 2.08" | 2.66" | (8X), 1.1/8-7nc, 8.00Øb.c.              |
|                  | 1/2" NPT         |                    |        |        |       |       |                                         |
| 4"-1500#         | None or 1/4" NPT | C                  | 12.25" | 6.20"  | 2.32" | 3.31" | (8X), 1.1/4-7nc, 9.50Øb.c.              |
|                  | 1/2" NPT         |                    |        |        |       |       |                                         |

## HFL Dimensions 4.1" diaphragm

| Seal Type        | Flush Port Size  | Configuration Type | A      | B     | C     | D     | Bolt Quantity, Bolt Size, Bolt Circle Ø |
|------------------|------------------|--------------------|--------|-------|-------|-------|-----------------------------------------|
| 1/2"-150#        | None or 1/4" NPT | B                  | 5.40"  | 1.38" | .06   | 2.46" | (4X), 1/2-13nc,2.38Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 3/4"-150#        | None or 1/4" NPT | B                  | 5.40"  | 1.69" | .06   | 2.46" | (4X), 1/2-13nc,2.75Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 1"-150           | None or 1/4" NPT | B                  | 5.40"  | 2.00" | .06   | 2.46" | (4X), 1/2-13nc,3.12Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 1-1/2"-150#      | None or 1/4" NPT | B                  | 5.40"  | 2.88" | .06   | 2.46" | (4X), 1/2-13nc,3.12Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 2"-150#          | None or 1/4" NPT | B                  | 5.98"  | 3.62" | .06   | 2.46" | (4X), 5/8-11nc,4.75Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 3"-150#          | None or 1/4" NPT | C                  | 7.50"  | 5.15" | 1.30" | 1.66" | (4X), 5/8-11nc, 6.00Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 4"-150#          | None or 1/4" NPT | C                  | 9.00"  | 6.20" | 1.30" | 1.66" | (8X), 5/8-11nc, 7.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 1/2"-300#        | None or 1/4" NPT | B                  | 5.40"  | 1.38" | .06   | 2.46" | (4X), 1/2-13nc,2.62Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 3/4"-300#        | None or 1/4" NPT | B                  | 5.40"  | 1.69" | .06   | 2.46" | (4X), 5/8-11nc,3.25Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 1"-300#          | None or 1/4" NPT | B                  | 5.40"  | 2.00" | .06   | 2.46" | (4X), 5/8-11nc,3.50Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 1-1/2"-300#      | None or 1/4" NPT | B                  | 6.12"  | 2.88" | .06   | 2.46" | (4X), 3/4-10nc,4.50Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 2"-300#          | None or 1/4" NPT | B                  | 6.48"  | 3.62" | .06   | 2.46" | (8X), 5/8-11nc, 5.00Øb.c.               |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 3"-300#          | None or 1/4" NPT | C                  | 8.25"  | 5.15" | 1.30" | 1.66" | (8X), 3/4-10nc, 6.62Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 4"-300#          | None or 1/4" NPT | C                  | 10.00" | 6.20" | 1.30" | 2.66" | (8X), 3/4-10nc, 7.88Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 1/2"-600#        | None or 1/4" NPT | B                  | 5.40"  | 1.38" | .06   | 2.46" | (4X), 1/2-13nc,2.62Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 3/4"-600#        | None or 1/4" NPT | B                  | 5.40"  | 1.69" | .06   | 2.46" | (4X), 5/8-11nc,3.25Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 1"-600#          | None or 1/4" NPT | B                  | 5.40"  | 2.00" | .06   | 2.46" | (4X), 5/8-11nc,3.50Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 1-1/2"-600#      | None or 1/4" NPT | A                  | 6.12"  | 2.88" | .06   | 2.46" | (4X), 3/4-10nc,4.50Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.79" |                                         |
| 2"-600#          | None or 1/4" NPT | B                  | 6.50"  | 3.62" | .06   | 2.86" | (8X), 5/8-11nc, 5.00Øb.c.               |
|                  | 1/2" NPT         |                    |        |       |       | 2.19" |                                         |
| 3"-600#          | None or 1/4" NPT | C                  | 8.25"  | 5.15" | 1.30" | 2.66" | (8X), 3/4-10nc, 6.62Øb.c.               |
|                  | 1/2" NPT         |                    |        |       | 1.63" |       |                                         |
| 4"-600#          | None or 1/4" NPT | C                  | 10.75" | 6.20" | 1.70" | 2.66" | (8X), 3/4-10nc, 8.50Øb.c.               |
|                  | 1/2" NPT         |                    |        |       |       |       |                                         |
| 1/2"-900/1500#   | None or 1/4" NPT | B                  | 5.40"  | 1.38" | .06   | 2.66" | (4X), 3/4-10nc,3.25Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.99" |                                         |
| 3/4"-900/1500#   | None or 1/4" NPT | B                  | 5.40"  | 1.69" | .06   | 2.66" | (4X), 3/4-10nc,3.50Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       | 2.99" |                                         |
| 1"-900/1500#     | None or 1/4" NPT | B                  | 5.88"  | 2.00" | .06   | 2.66" | (4X), 7/8-9nc,4.00Øb.c.                 |
|                  | 1/2" NPT         |                    |        |       |       | 2.99" |                                         |
| 1-1/2"-900/1500# | None or 1/4" NPT | B                  | 7.00"  | 2.88" | .06   | 2.66" | (4X), 1-8nc, 4.88Øb.c.                  |
|                  | 1/2" NPT         |                    |        |       |       | 2.99" |                                         |
| 2"-900/1500#     | None or 1/4" NPT | B                  | 8.48"  | 3.62" | .06   | 2.96" | (8X), 7/8-9nc, 6.50Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       |       |                                         |
| 3"-900#          | None or 1/4" NPT | C                  | 9.50"  | 5.15" | 1.70" | 2.66" | (8X), 7/8-9nc, 7.50Øb.c.                |
|                  | 1/2" NPT         |                    |        |       |       |       |                                         |
| 4"-900#          | None or 1/4" NPT | C                  | 11.50" | 6.20" | 1.95" | 2.66" | (8X), 1-1/8-7nc, 9.25Øb.c.              |
|                  | 1/2" NPT         |                    |        |       |       |       |                                         |
| 4"-1500#         | None or 1/4" NPT | C                  | 12.25" | 6.20" | 2.32" | 3.31" | (8X), 1.1/4-7nc, 9.50Øb.c.              |
|                  | 1/2" NPT         |                    |        |       |       |       |                                         |
| 3"-1500#         | None or 1/4" NPT | C                  | 10.50" | 5.15" | 2.08" | 2.66" | (8X), 1.1/8-7nc, 8.00Øb.c.              |
|                  | 1/2" NPT         |                    |        |       |       |       |                                         |

## Applications & Features

- Flanged Seal with flush diaphragm for off-line process connection
- Rotating flange design
- Standard flange sizes from ANSI 2" to 4". Additional sizes available on request
- Standard flange ratings from ANSI Class 150 to ANSI Class 2500
- Other flange standards available

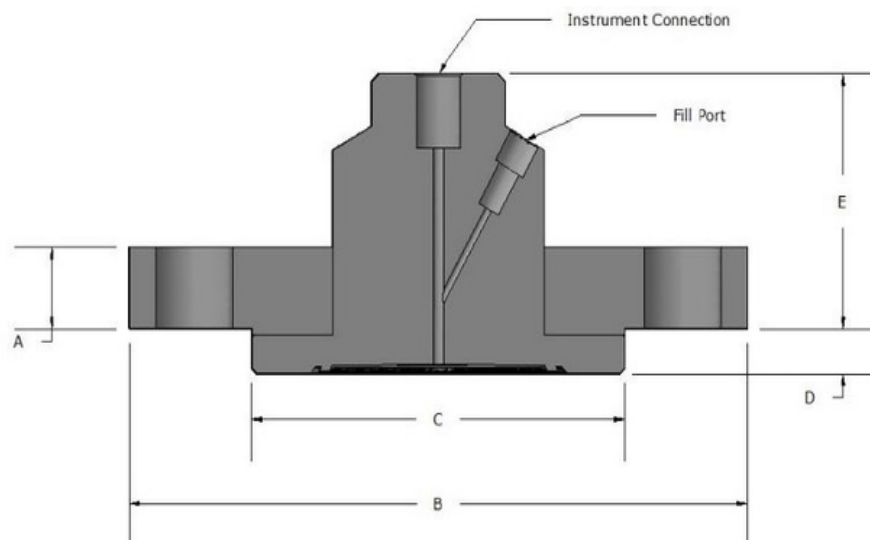


## Ordering Information

| Base Model                |      |                                                         |
|---------------------------|------|---------------------------------------------------------|
|                           | HFF- | Flush Flanged Seal                                      |
| Type                      |      |                                                         |
|                           | A    | ANSI Raised Face (RF) Rotatable Flange                  |
|                           | B    | ANSI Raised Face (RF) Single Piece Non-Rotatable Flange |
|                           | F    | ANSI Raised Face (FF) Single piece Flat Face Flange     |
|                           | R    | ANSI RING Joint (RTJ) Rotatable Flange                  |
|                           | D    | DIN (RF) EN1092-1 Rotatable Flange                      |
|                           | E    | DIN (RF) EN1092-1 Single Piece Non-Rotatable Flange     |
| Inst. Connection          |      |                                                         |
|                           | W    | Weld Connection (N/A with Titanium or Zirconium)        |
|                           | 2    | 1/4" NPT                                                |
|                           | 4    | 1/2" NPT                                                |
| Upper Insert              |      |                                                         |
|                           | S6   | 316 / 316LSS                                            |
|                           | HC   | Hastelloy C276                                          |
|                           | TI   | Titanium (Required with Titanium diaphragm)             |
|                           | Z7   | Zirconium 702 (Required with Zirconium diaphragm)       |
| Process Connection Size   |      |                                                         |
|                           | 20   | 2.0"                                                    |
|                           | 30   | 3.0"                                                    |
|                           | 40   | 4.0"                                                    |
|                           | C0   | DN50                                                    |
|                           | D0   | DN80                                                    |
|                           | E0   | DN100                                                   |
|                           | F0   | DN125                                                   |
| Process Connection Rating |      |                                                         |
|                           | A    | 150#                                                    |
|                           | B    | 300#                                                    |
|                           | C    | 600#                                                    |
|                           | D    | 900#                                                    |
|                           | E    | 1500#                                                   |
|                           | F    | 2500#                                                   |
|                           |      | CONTINUED ON THE NEXT PAGE                              |

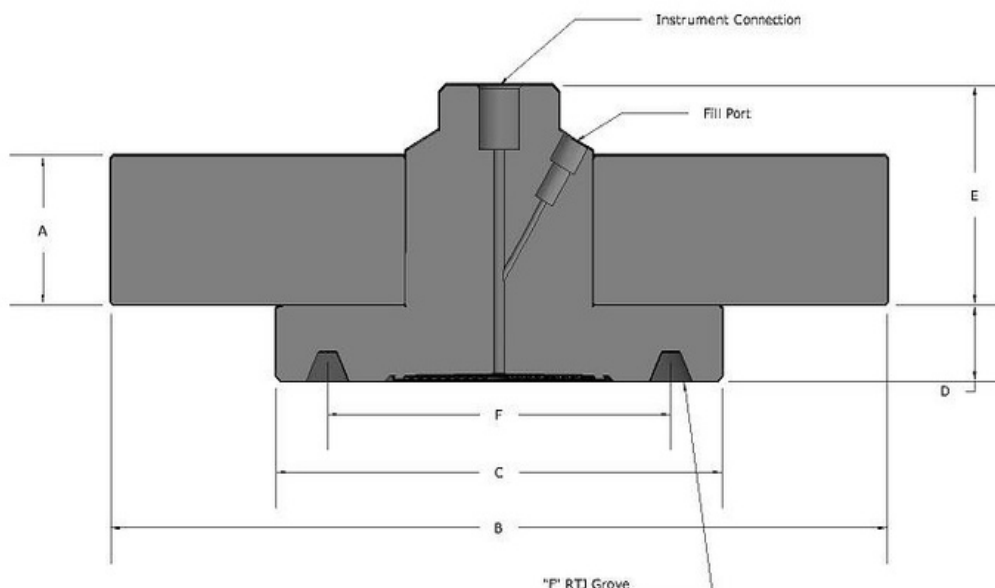
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|------------------------------------|-----------|----------------------------------|--------------------------|
|                                    | <b>G</b>  | PN 10/40                         | DN50                     |
|                                    | <b>H</b>  | PN 10/16                         | DN80, DN100, DN125       |
|                                    | <b>J</b>  | PN 25/40                         | DN80, DN100, DN125       |
|                                    | <b>L</b>  | PN 63                            | DN50, DN80, DN100, DN125 |
|                                    | <b>M</b>  | PN 100                           | DN50, DN80, DN100, DN125 |
|                                    | <b>P</b>  | PN 160                           | DN50, DN80, DN100, DN125 |
|                                    | <b>R</b>  | PN 250                           | DN50, DN80, DN100, DN125 |
| <b>Flange Material</b>             |           |                                  |                          |
|                                    | <b>S6</b> | 316 / 316LSS                     |                          |
|                                    | <b>CS</b> | Carbon Steel                     |                          |
|                                    | <b>HC</b> | Hastelloy C276                   |                          |
| <b>Diaphragm Material</b>          |           |                                  |                          |
|                                    | <b>S6</b> | 316 / 316LSS                     |                          |
|                                    | <b>S4</b> | 304 / 304LSS                     |                          |
|                                    | <b>S1</b> | 321SS                            |                          |
|                                    | <b>S7</b> | 347SS                            |                          |
|                                    | <b>TA</b> | Tantalum                         |                          |
|                                    | <b>C2</b> | Alloy 20                         |                          |
|                                    | <b>HC</b> | Alloy C-276                      |                          |
|                                    | <b>HB</b> | Alloy B-3                        |                          |
|                                    | <b>M4</b> | Monel 400                        |                          |
|                                    | <b>I6</b> | Alloy 600                        |                          |
|                                    | <b>DP</b> | Alloy 2205                       |                          |
|                                    | <b>NI</b> | Nickel 201/200                   |                          |
|                                    | <b>TI</b> | Titanium                         |                          |
|                                    | <b>Z7</b> | Zirconium 702                    |                          |
| <b>Calibration / Flushing Ring</b> |           |                                  |                          |
|                                    | <b>NN</b> | None                             |                          |
|                                    | <b>S6</b> | 316 / 316LSS                     |                          |
|                                    | <b>S4</b> | 304 / 304LSS                     |                          |
|                                    | <b>S1</b> | 321SS                            |                          |
|                                    | <b>S7</b> | 347SS                            |                          |
|                                    | <b>C2</b> | Alloy 20                         |                          |
|                                    | <b>HC</b> | Alloy C-276                      |                          |
|                                    | <b>HB</b> | Alloy B-3                        |                          |
|                                    | <b>M4</b> | Monel 400                        |                          |
|                                    | <b>I6</b> | Alloy 600                        |                          |
|                                    | <b>DP</b> | Alloy 2205                       |                          |
|                                    | <b>NI</b> | Nickel 201 /200                  |                          |
|                                    | <b>TI</b> | Titanium                         |                          |
|                                    | <b>Z7</b> | Zirconium 702                    |                          |
| <b>Flushing Connections</b>        |           |                                  |                          |
|                                    | <b>N</b>  | No Flush                         |                          |
|                                    | <b>1</b>  | Single 1/4" NPTF                 |                          |
|                                    | <b>2</b>  | Dual 1/4"NPTF                    |                          |
|                                    | <b>3</b>  | Single 1/2" NPTF                 |                          |
|                                    | <b>4</b>  | Dual 1/2" NPTF                   |                          |
|                                    | <b>5</b>  | Single 1/4" Pipe Socket Weld     |                          |
|                                    | <b>6</b>  | Dual 1/4" Pipe Socket Weld       |                          |
|                                    | <b>7</b>  | Single 1/2" Pipe Socket Weld     |                          |
|                                    | <b>8</b>  | Dual 1/2" Pipe Socket Weld       |                          |
|                                    |           | CONTINUED ON THE NEXT PAGE       |                          |

|                          |            | CONTINUED FROM THE PREVIOUS PAGE                                      |
|--------------------------|------------|-----------------------------------------------------------------------|
| <b>Flush Ring Gasket</b> |            | <b>One Gasket Supplied</b>                                            |
|                          | <b>NN</b>  | <b>No Gasket</b>                                                      |
|                          | <b>K4</b>  | Klinger C4401 <b>Standard</b>                                         |
|                          | <b>GL</b>  | Gylon 3510                                                            |
|                          | <b>GY</b>  | Gylon 3500                                                            |
|                          | <b>GF</b>  | Grafoil                                                               |
|                          | <b>TF</b>  | PTFE                                                                  |
| <b>Options</b>           |            |                                                                       |
|                          | <b>/AU</b> | Gold Plated 0.0003 (7.5 microns) Thick ASTM B488, TYPE III, GRADE A   |
|                          | <b>/A2</b> | Gold Plated 0.0007 (17.5 microns) Thick ASTM B488, TYPE III, GRADE A  |
|                          | <b>/A4</b> | Gold Plated 0.001 (25 microns) Thick ASTM B488, TYPE III, GRADE A     |
|                          | <b>/NS</b> | PTFE Coated Diaphragm (Non-Stick Only - Not for corrosion protection) |
|                          | <b>/P1</b> | With single pipe plug for flush port ( Material same as lower)        |
|                          | <b>/P2</b> | With dual pipe plugs for flush port ( Material same as lower)         |
|                          | <b>/MC</b> | Material cert with MTR's                                              |



## HFF – ANSI Raised Face Dimensions

| Diaphragm Diameter | Flange       | Bolt Quantity, Bolt Hole Bolt Circle Ø | "A"   | "B"    | "C"   | "D"   | "E"   |
|--------------------|--------------|----------------------------------------|-------|--------|-------|-------|-------|
| 2.4"               | 2"-150#      | (4X), 0.75Ø, 4.75Øb.c.                 | 0.68" | 6.00"  | 3.62" | 0.33" | 2.23" |
| 3.5"               | 3"-150#      | (4X), 0.75Ø, 6.00Øb.c.                 | 0.87" | 7.50"  | 5.00" | 0.33" | 2.23" |
| 3.5"               | 4"-150#      | (8X), 0.75Ø, 7.50Øb.c.                 | 0.87" | 9.00"  | 6.19" | 0.33" | 2.23" |
| 2.4"               | 2"-300#      | (8X), 0.75Ø, 5.00Øb.c.                 | 0.81" | 6.50"  | 3.62" | 0.33" | 2.23" |
| 3.5"               | 3"-300#      | (8X), 0.88Ø, 6.62Øb.c.                 | 1.06" | 8.25"  | 5.00" | 0.33" | 2.23" |
| 3.5"               | 4"-300#      | (8X), 0.88Ø, 7.88Øb.c.                 | 1.18" | 10.00" | 6.00" | 0.33" | 2.23" |
| 2.4"               | 2"-600#      | (8X), 0.75Ø, 5.00Øb.c.                 | 1.00" | 6.50"  | 3.62" | 0.33" | 2.23" |
| 3.5"               | 3"-600#      | (8X), 0.88Ø, 6.62Øb.c.                 | 1.25" | 8.25"  | 5.00" | 0.33" | 2.23" |
| 3.5"               | 4"-600#      | (8X), 1.00Ø, 8.50Øb.c.                 | 1.50" | 10.75" | 6.00" | 0.33" | 2.23" |
| 2.4"               | 2"-900/1500# | (8X), 1.00Ø, 6.50Øb.c.                 | 1.50" | 8.50"  | 3.62" | 0.33" | 2.23" |
| 3.5"               | 3"-900#      | (8X), 1.00Ø, 7.50Øb.c.                 | 1.50" | 9.50"  | 5.00" | 0.33" | 2.23" |
| 3.5"               | 4"-900#      | (8X), 1.25Ø, 9.25Øb.c.                 | 1.75" | 11.50" | 6.00" | 0.33" | 2.66" |
| 3.5"               | 3"-1500#     | (8X), 1.25Ø, 8.00Øb.c.                 | 1.88" | 10.50" | 5.00" | 0.33" | 2.66" |
| 3.5"               | 4"-1500#     | (8X), 1.38Ø, 9.50Øb.c.                 | 2.12" | 12.25" | 6.00" | 0.33" | 3.31" |
| 2.4"               | 2"-2500#     | (8X), 1.12Ø, 6.75Øb.c.                 | 2.00" | 9.25"  | 3.62" | 0.33" | 2.66" |
| 3.5"               | 3"-2500#     | (8X), 1.38Ø, 9.00Øb.c.                 | 2.62" | 12.00" | 5.00" | 0.33" | 3.31" |

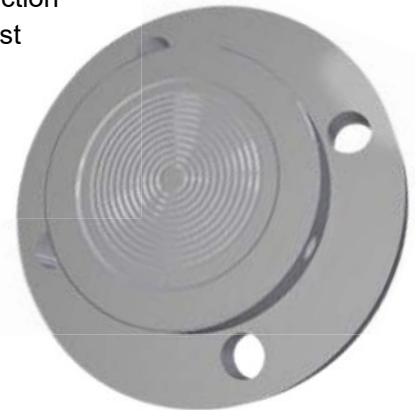


## HFF – ANSI RTJ Dimensions

| Diaph. Diameter | Flange       | Bolt Quantity, Bolt Hole Ø, Bolt Circle Ø | "A"   | "B"    | "C"   | "D"  | "E"   | "F"   | RTJ Grv. # |
|-----------------|--------------|-------------------------------------------|-------|--------|-------|------|-------|-------|------------|
| 2.4"            | 2"-150#      | (4X), 0.75Ø, 4.75Øb.c.                    | 0.68" | 6.00"  | 4.00" | .75" | 2.23" | 3.25" | R22        |
| 3.5"            | 3"-150#      | (4X), 0.75Ø, 6.00Øb.c.                    | 0.87" | 7.50"  | 5.25" | .75" | 2.23" | 4.50" | R29        |
| 3.5"            | 4"-150#      | (8X), 0.75Ø, 7.50Øb.c.                    | 0.87" | 9.00"  | 6.75" | .75" | 2.23" | 5.88" | R36        |
| 2.4"            | 2"-300#      | (8X), 0.75Ø, 5.00Øb.c.                    | 0.81" | 6.50"  | 4.25" | .75" | 2.23" | 3.25" | R23        |
| 3.5"            | 3"-300#      | (8X), 0.88Ø, 6.62Øb.c.                    | 1.06" | 8.25"  | 5.75" | .75" | 2.23" | 4.88" | R31        |
| 3.5"            | 4"-300#      | (8X), 0.88Ø, 7.88Øb.c.                    | 1.18" | 10.00" | 6.88" | .75" | 2.23" | 5.88" | R37        |
| 2.4"            | 2"-600#      | (8X), 0.75Ø, 5.00Øb.c.                    | 1.00" | 6.50"  | 4.25" | .75" | 2.23" | 3.25" | R23        |
| 3.5"            | 3"-600#      | (8X), 0.88Ø, 6.62Øb.c.                    | 1.25" | 8.25"  | 5.75" | .75" | 2.23" | 4.88" | R31        |
| 3.5"            | 4"-600#      | (8X), 1.00Ø, 8.50Øb.c.                    | 1.50" | 10.75" | 6.88" | .75" | 2.23" | 5.88" | R37        |
| 2.9"            | 2"-900/1500# | (8X), 1.00Ø, 6.50Øb.c.                    | 1.50" | 8.50"  | 4.88" | .75" | 2.23" | 3.75" | R24        |
| 3.5"            | 3"-900#      | (8X), 1.00Ø, 7.50Øb.c.                    | 1.50" | 9.50"  | 6.00" | .75" | 2.23" | 4.88" | R31        |
| 3.5"            | 4"-900#      | (8X), 1.25Ø, 9.25Øb.c.                    | 1.75" | 11.50" | 7.00" | .75" | 2.66" | 5.88" | R37        |
| 3.5"            | 3"-1500#     | (8X), 1.25Ø, 8.00Øb.c.                    | 1.88" | 10.50" | 6.62" | .75" | 2.66" | 5.38" | R35        |
| 3.5"            | 4"-1500#     | (8X), 1.38Ø, 9.50Øb.c.                    | 2.12" | 12.25" | 7.62" | .75" | 3.31" | 6.38" | R39        |
| 3.5"            | 2"-2500#     | (8X), 1.12Ø, 6.75Øb.c.                    | 2.00" | 9.25"  | 5.25" | .75" | 2.66" | 4.00" | R26        |
| 3.5"            | 3"-2500#     | (8X), 1.38Ø, 9.00Øb.c.                    | 2.62" | 12.00" | 6.50" | .75" | 3.31" | 5.00" | R32        |

## Applications & Features

- Flanged Wafer/Pancake Seal with flush diaphragm for off-line process connection
- Standard flange sizes from ANSI 2" to 4". Additional sizes available on request
- Standard flange ratings from ANSI Class 150 to ANSI Class 2500
- Sold with or without the flange
- Other flange standards available



## Ordering Information

| Base Model                |             |                                                            |
|---------------------------|-------------|------------------------------------------------------------|
|                           | <b>HFP-</b> | Flanged Pancake Seal                                       |
| Type                      |             |                                                            |
|                           | <b>A</b>    | ANSI Raised Face (RF)                                      |
|                           | <b>R</b>    | ANSI RING Joint (RTJ)                                      |
|                           | <b>D</b>    | DIN (RF) EN1092-1                                          |
| Inst. Connection          |             |                                                            |
|                           | <b>W</b>    | Weld Connection (Not available with Titanium or Zirconium) |
|                           | <b>2</b>    | 1/4" NPT                                                   |
| Process Connection Size   |             |                                                            |
|                           | <b>20</b>   | 2.0"                                                       |
|                           | <b>30</b>   | 3.0"                                                       |
|                           | <b>40</b>   | 4.0"                                                       |
|                           | <b>C0</b>   | DN50                                                       |
|                           | <b>D0</b>   | DN80                                                       |
|                           | <b>E0</b>   | DN100                                                      |
|                           | <b>F0</b>   | DN125                                                      |
| Process Connection Rating |             |                                                            |
|                           | <b>N</b>    | Backup flange not required                                 |
|                           | <b>A</b>    | 150#                                                       |
|                           | <b>B</b>    | 300#                                                       |
|                           | <b>C</b>    | 600#                                                       |
|                           | <b>D</b>    | 900#                                                       |
|                           | <b>E</b>    | 1500#                                                      |
|                           | <b>F</b>    | 2500#                                                      |
|                           | <b>G</b>    | PN 10/40 DN50                                              |
|                           | <b>H</b>    | PN 10/16 DN80, DN100, DN125                                |
|                           | <b>J</b>    | PN 25/40 DN80, DN100, DN125                                |
|                           | <b>L</b>    | PN 63 DN50, DN80, DN100, DN125                             |
|                           | <b>M</b>    | PN 100 DN50, DN80, DN100, DN125                            |
|                           | <b>P</b>    | PN 160 DN50, DN80, DN100, DN125                            |
|                           | <b>R</b>    | PN 250 DN50, DN80, DN100, DN125                            |
| Diaphragm And Body        |             |                                                            |
|                           |             | <b>Diaphragm &amp; Raised Face</b> <b>Body</b>             |
|                           | <b>S6</b>   | 316SS 316SS                                                |
|                           | <b>S4</b>   | 304SS 316SS                                                |
|                           |             | <b>CONTINUED ON THE NEXT PAGE</b>                          |

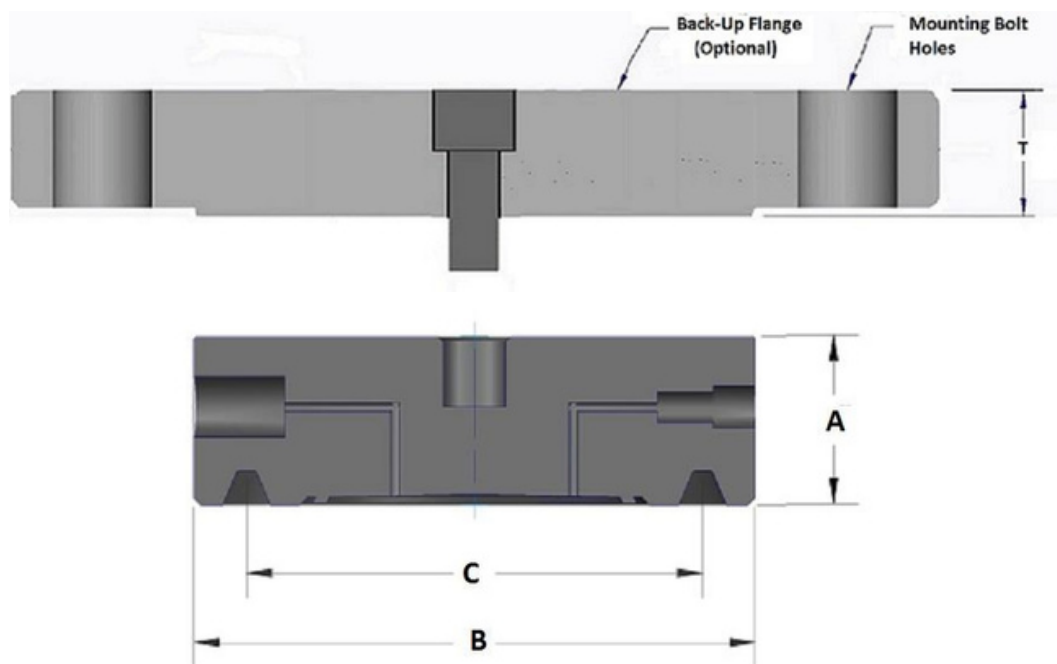
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|----------------------------------|----|------------------------------|---------------------|
|                                  |    | Diaphragm & Raised Face      | Body                |
|                                  | S1 | 321SS                        | 316SS               |
|                                  | S7 | 347SS                        | 316SS               |
|                                  | TA | Tantalum                     | 316SS               |
| ..                               | C2 | Alloy 20                     | 316SS               |
|                                  | HC | Alloy C-276                  | 316SS               |
|                                  | HB | Alloy B-3                    | 316SS               |
|                                  | M4 | Monel 400                    | 316SS               |
|                                  | I6 | Alloy 600                    | 316SS               |
|                                  | DP | Alloy 2205                   | 316SS               |
|                                  | NI | Nickel 200/201               | Nickel 201          |
|                                  | TI | Titanium                     | 316SS 300°F or Less |
|                                  | Z7 | Zirconium 702                | 316SS 300°F or Less |
|                                  | TI | Titanium                     | Titanium            |
|                                  | Z7 | Zirconium 702                | Zirconium 702       |
| Backup Flange Material           |    |                              |                     |
|                                  | NN | Backup flange not required   |                     |
|                                  | S6 | 316 / 316LSS                 |                     |
|                                  | CS | Carbon Steel                 |                     |
| Calibration / Flushing Ring      |    |                              |                     |
|                                  | NN | None                         |                     |
|                                  | S6 | 316 / 316LSS                 |                     |
|                                  | S4 | 304 / 304LSS                 |                     |
|                                  | S1 | 321SS                        |                     |
|                                  | S7 | 347SS                        |                     |
|                                  | CS | CS Nickel Plated             |                     |
|                                  | C2 | Alloy 20                     |                     |
|                                  | HC | Alloy C-276                  |                     |
|                                  | HB | Alloy B-3                    |                     |
|                                  | M4 | Monel 400                    |                     |
|                                  | I6 | Alloy 600                    |                     |
|                                  | DP | Alloy 2205                   |                     |
|                                  | NI | Nickel 201 /200              |                     |
|                                  | TI | Titanium                     |                     |
|                                  | Z7 | Zirconium 702                |                     |
|                                  | TF | PTFE                         | 200 PSI MAX         |
| Flushing Connections             |    |                              |                     |
|                                  | N  | No Flush                     |                     |
|                                  | 1  | Single 1/4" NPTF             |                     |
|                                  | 2  | Dual 1/4"NPTF                |                     |
|                                  | 3  | Single 1/2"NPTF              |                     |
|                                  | 4  | Dual 1/2" NPTF               |                     |
|                                  | 5  | Single 1/4" Pipe Socket Weld |                     |
|                                  | 6  | Dual 1/4" Pipe Socket Weld   |                     |
|                                  | 7  | Single 1/2" Pipe Socket Weld |                     |
|                                  | 8  | Dual 1/2" Pipe Socket Weld   |                     |
| Flushing Connections             |    |                              |                     |
|                                  | N  | No Flush                     |                     |
|                                  | 1  | Single 1/4" NPTF             |                     |
|                                  | 2  | Dual 1/4" NPTF               |                     |
|                                  | 3  | Single 1/2"NPTF              |                     |
| CONTINUED ON THE NEXT PAGE       |    |                              |                     |

|                |            |                                         |                                                 |
|----------------|------------|-----------------------------------------|-------------------------------------------------|
|                |            | <b>CONTINUED FROM THE PREVIOUS PAGE</b> |                                                 |
|                | <b>4</b>   | Dual 1/2" NPTF                          |                                                 |
|                | <b>5</b>   | Single 1/4" Pipe Socket Weld            |                                                 |
| <b>Options</b> |            |                                         |                                                 |
|                | <b>/AU</b> | Gold Plated 0.0003 (7.5 microns) Thick  | ASTM B488, TYPE III, GRADE A                    |
|                | <b>/A2</b> | Gold Plated 0.0007 (17.5 microns) Thick | ASTM B488, TYPE III, GRADE A                    |
|                | <b>/A4</b> | Gold Plated 0.001 (25 microns) Thick    | ASTM B488, TYPE III, GRADE A                    |
|                | <b>/NS</b> | PTFE Coated Diaphragm                   | (Non-Stick Only - Not for corrosion protection) |
|                | <b>/P1</b> | With single pipe plug for flush port    |                                                 |
|                | <b>/P2</b> | With dual pipe plugs for flush port     |                                                 |
|                | <b>/MC</b> | Material cert with MTRs                 |                                                 |



HFP ANSI Raised Face Dimensions

| Diaphragm Diameter | Flange Size | Bolt Quantity, Bolt Hole $\varnothing$ , Bolt Circle $\varnothing$ | "T"   | Flange Diameter | "A"   | "B"   |
|--------------------|-------------|--------------------------------------------------------------------|-------|-----------------|-------|-------|
| 2.4"               | 2"-150#     | (4X), 0.75 $\varnothing$ , 4.75 $\varnothing$ b.c.                 | 0.75" | 6.00"           | 1.08" | 3.62" |
| 2.4"               | 2"-300#     | (8X), 0.75 $\varnothing$ , 5.00 $\varnothing$ b.c.                 | 0.88" | 6.50"           | 1.08" | 3.62" |
| 2.4"               | 2"-600#     | (8X), 0.75 $\varnothing$ , 5.00 $\varnothing$ b.c.                 | 1.25" | 6.50"           | 1.08" | 3.62" |
| 2.4"               | 2"-900#     | (8X), 1.00 $\varnothing$ , 6.50 $\varnothing$ b.c.                 | 1.75" | 8.50"           | 1.08" | 3.62" |
| 2.4"               | 2"-1500#    | (8X), 1.00 $\varnothing$ , 6.50 $\varnothing$ b.c.                 | 1.75" | 8.50"           | 1.08" | 3.62" |
| 2.4"               | 2"-2500#    | (8X), 1.12 $\varnothing$ , 6.75 $\varnothing$ b.c.                 | 2.25" | 9.25"           | 1.08" | 3.62" |
| 3.5"               | 3"-150#     | (4X), 0.75 $\varnothing$ , 6.00 $\varnothing$ b.c.                 | 0.94" | 7.50"           | 1.08" | 5.00" |
| 3.5"               | 3"-300#     | (8X), 0.88 $\varnothing$ , 6.62 $\varnothing$ b.c.                 | 1.12" | 8.25"           | 1.08" | 5.00" |
| 3.5"               | 3"-600#     | (8X), 0.88 $\varnothing$ , 6.62 $\varnothing$ b.c.                 | 1.50" | 8.25"           | 1.08" | 5.00" |
| 3.5"               | 3"-900#     | (8X), 1.00 $\varnothing$ , 7.50 $\varnothing$ b.c.                 | 1.75" | 9.50"           | 1.08" | 5.00" |
| 3.5"               | 3"-1500#    | (8X), 1.25 $\varnothing$ , 8.00 $\varnothing$ b.c.                 | 2.13" | 10.50"          | 1.08" | 5.00" |
| 3.5"               | 3"-2500#    | (8X), 1.38 $\varnothing$ , 9.00 $\varnothing$ b.c.                 | 2.87" | 12.00"          | 1.08" | 5.00" |
| 3.5"               | 4"-150#     | (8X), 0.75 $\varnothing$ , 7.50 $\varnothing$ b.c.                 | 0.94" | 9.00"           | 1.08" | 6.00" |
| 3.5"               | 4"-300#     | (8X), 0.88 $\varnothing$ , 7.88 $\varnothing$ b.c.                 | 1.25" | 10.00"          | 1.08" | 6.00" |
| 3.5"               | 4"-600#     | (8X), 1.00 $\varnothing$ , 8.50 $\varnothing$ b.c.                 | 1.75" | 10.75"          | 1.08" | 6.00" |
| 3.5"               | 4"-900#     | (8X), 1.25 $\varnothing$ , 9.25 $\varnothing$ b.c.                 | 2.00" | 11.50"          | 1.08" | 6.00" |

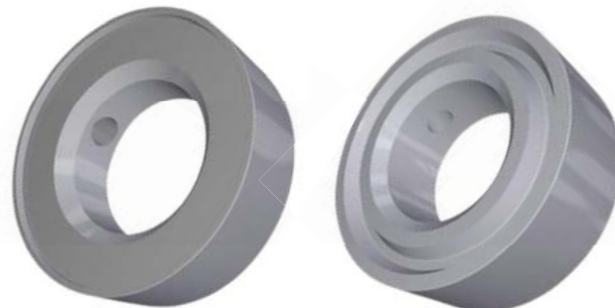


HFP ANSI RTJ Dimensions

| Flange Size | Diaphragm Diameter | Bolt Quantity, Bolt Hole $\phi$ , Bolt Circle $\phi$ | "T"   | Flange Diameter | "A"   | "B"   | "C"   | RTJ Groove # |
|-------------|--------------------|------------------------------------------------------|-------|-----------------|-------|-------|-------|--------------|
| 2"-150#     | 2.4"               | (4X), 0.75 $\phi$ , 4.75 $\phi$ b.c.                 | 0.75" | 6.00"           | 1.20" | 4.00" | 3.25" | R22          |
| 3"-150#     | 3.5"               | (4X), 0.75 $\phi$ , 6.00 $\phi$ b.c.                 | 0.94" | 7.50"           | 1.20" | 5.25" | 4.50" | R29          |
| 4"-150#     | 3.5"               | (8X), 0.75 $\phi$ , 7.50 $\phi$ b.c.                 | 0.94" | 9.00"           | 1.20" | 6.75" | 5.88" | R36          |
| 2"-300#     | 2.4"               | (8X), 0.75 $\phi$ , 5.00 $\phi$ b.c.                 | 0.88" | 6.50"           | 1.20" | 4.25" | 3.25" | R23          |
| 3"-300#     | 3.5"               | (8X), 0.88 $\phi$ , 6.62 $\phi$ b.c.                 | 1.12" | 8.25"           | 1.26" | 5.75" | 4.88" | R31          |
| 4"-300#     | 3.5"               | (8X), 0.88 $\phi$ , 7.88 $\phi$ b.c.                 | 1.25" | 10.00"          | 1.20" | 6.88" | 5.88" | R37          |
| 2"-600#     | 2.4"               | (8X), 0.75 $\phi$ , 5.00 $\phi$ b.c.                 | 1.25" | 6.50"           | 1.26" | 4.25" | 3.25" | R23          |
| 3"-600#     | 3.5"               | (8X), 0.88 $\phi$ , 6.62 $\phi$ b.c.                 | 1.50" | 8.25"           | 1.26" | 5.75" | 4.88" | R31          |
| 4"-600#     | 3.5"               | (8X), 1.00 $\phi$ , 8.50 $\phi$ b.c.                 | 1.75" | 10.75"          | 1.26" | 6.88" | 5.88" | R57          |
| 2"-900#     | 2.4"               | (8X), 1.00 $\phi$ , 6.50 $\phi$ b.c.                 | 1.75" | 8.50"           | 1.20" | 4.88" | 3.75" | R24          |
| 3"-900#     | 3.5"               | (8X), 1.00 $\phi$ , 7.50 $\phi$ b.c.                 | 1.75" | 9.50"           | 1.26" | 6.00" | 4.88" | R31          |
| 4"-900#     | 3.5"               | (8X), 1.25 $\phi$ , 9.25 $\phi$ b.c.                 | 2.00" | 11.50"          | 1.26" | 7.00" | 5.88" | R37          |
| 2"-1500#    | 2.4"               | (8X), 1.00 $\phi$ , 6.50 $\phi$ b.c.                 | 1.75" | 8.50"           | 1.20" | 4.88" | 3.75" | R24          |
| 3"-1500#    | 3.5"               | (8X), 1.25 $\phi$ , 8.00 $\phi$ b.c.                 | 2.13" | 10.50"          | 1.26" | 6.62" | 5.38" | R35          |
| 4"-1500#    | 3.5"               | (8X), 1.38 $\phi$ , 9.50 $\phi$ b.c.                 | 2.38" | 12.25"          | 1.26" | 7.62" | 6.38" | R39          |
| 2"-2500#    | 2.4"               | (8X), 1.12 $\phi$ , 6.75 $\phi$ b.c.                 | 2.25" | 9.25"           | 1.20" | 5.25" | 4.00" | R26          |
| 3"-2500#    | 3.5"               | (8X), 1.38 $\phi$ , 9.00 $\phi$ b.c.                 | 2.87" | 12.00"          | 1.33" | 6.50" | 5.00" | R32          |

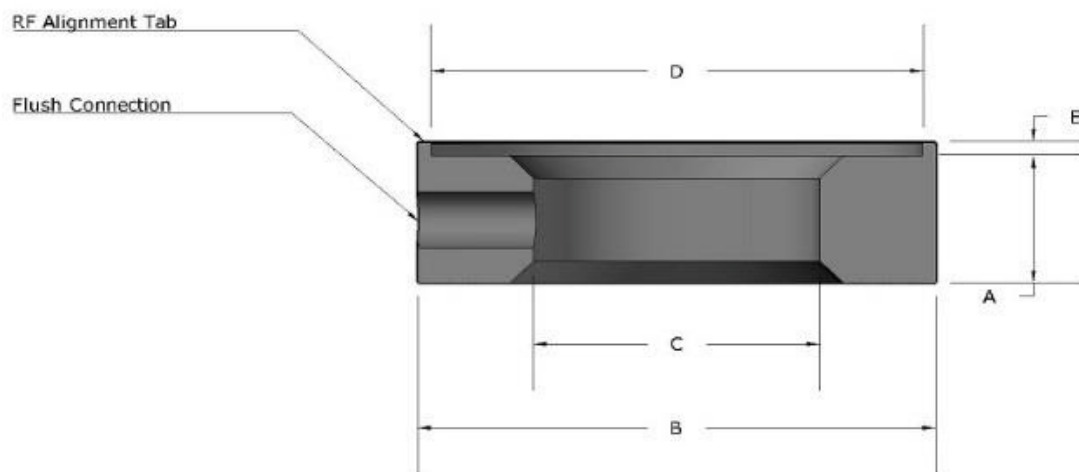
## Applications & Features

- Calibration / Flushing Ring Intended for use with model HFF and HFP
- Standard flange sizes from ANSI 2" to 4". Additional sizes available on request
- Pressure ratings to ANSI Class 2500.
- Other flange standards available



## Ordering Information

| Base Model              |             |                                                                 |
|-------------------------|-------------|-----------------------------------------------------------------|
|                         | <b>HFR-</b> | Calibration / Flushing Ring                                     |
| Process Size            |             |                                                                 |
|                         | <b>20</b>   | 2" ANSI Flange                                                  |
|                         | <b>30</b>   | 3" ANSI Flange                                                  |
|                         | <b>40</b>   | 4" ANSI Flange                                                  |
|                         | <b>C0</b>   | DN50                                                            |
|                         | <b>D0</b>   | DN80                                                            |
|                         | <b>E0</b>   | DN100                                                           |
|                         | <b>XX</b>   | Other as specified                                              |
| Process Connection Type |             |                                                                 |
|                         | <b>A</b>    | Raised Face                                                     |
|                         | <b>R</b>    | Ring Joint (RTJ)                                                |
| Flushing Connections    |             |                                                                 |
|                         | <b>1</b>    | Single 1/4"NPTF                                                 |
|                         | <b>2</b>    | Dual 1/4" NPTF                                                  |
|                         | <b>3</b>    | Single 1/2" NPTF                                                |
|                         | <b>4</b>    | Dual 1/2" NPTF                                                  |
| Body Material           |             |                                                                 |
|                         | <b>S6</b>   | 316 / 316LSS                                                    |
|                         | <b>S4</b>   | 304 / 304LSS                                                    |
|                         | <b>C2</b>   | Alloy 20                                                        |
|                         | <b>HC</b>   | Alloy C-276                                                     |
|                         | <b>HB</b>   | Alloy B-3                                                       |
|                         | <b>M4</b>   | Monel 400                                                       |
|                         | <b>I6</b>   | Alloy 600                                                       |
|                         | <b>DP</b>   | Alloy 2205                                                      |
|                         | <b>NI</b>   | Nickel 201 /200                                                 |
|                         | <b>TI</b>   | Titanium                                                        |
|                         | <b>Z7</b>   | Zirconium 702                                                   |
| Options                 |             |                                                                 |
|                         | <b>/P1</b>  | With single pipe plug for flush port                            |
|                         | <b>/P2</b>  | With dual pipe plugs for flush port                             |
|                         | <b>/NT</b>  | Without alignment tab (RF only) (For use with Non-Haygor Seals) |
|                         | <b>/MC</b>  | Material cert w/ MTR's                                          |



**Note:** The alignment tab is included when used with model HFF and HFP.

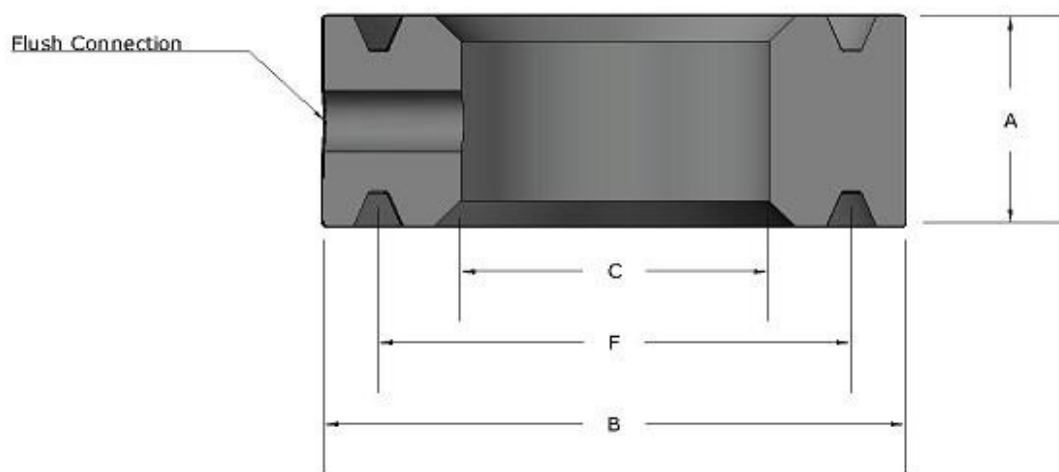
For others, reduce the thickness dimension by "E" shown above

### ANSI RF Flange Flush Ring Dimensions

| Flange Size                                        | "B"   | "C"   | "D"  | "E"  | "A"<br>¼"NPT | "A"<br>½"NPT |
|----------------------------------------------------|-------|-------|------|------|--------------|--------------|
| 2.0"                                               | 3.84" | 2.12" | 3.64 | .10" | 1.00"        | 1.33"        |
| 3.0"                                               | 5.23" | 3.60" | 5.02 | .10" | 1.00"        | 1.33"        |
| 4.0"                                               | 6.41" | 3.60" | 6.21 | .10" | 1.00"        | 1.33"        |
| Other Sizes Available on Request – Consult Factory |       |       |      |      |              |              |

### DIN RF Flange Flush Ring Dimensions

| Flange Size                                        | "B"  | "C"  | "D"  | "E"  | "A"<br>¼"NPT | "A"<br>½"NPT |
|----------------------------------------------------|------|------|------|------|--------------|--------------|
| DN 50                                              | 4.22 | 2.40 | 4.02 | .10" | 1.00"        | 1.33"        |
| DN 80                                              | 4.65 | 3.60 | 5.45 | .10" | 1.00"        | 1.33"        |
| DN 100                                             | 6.44 | 3.60 | 6.24 | .10" | 1.00"        | 1.33"        |
| Other Sizes Available on Request – Consult Factory |      |      |      |      |              |              |

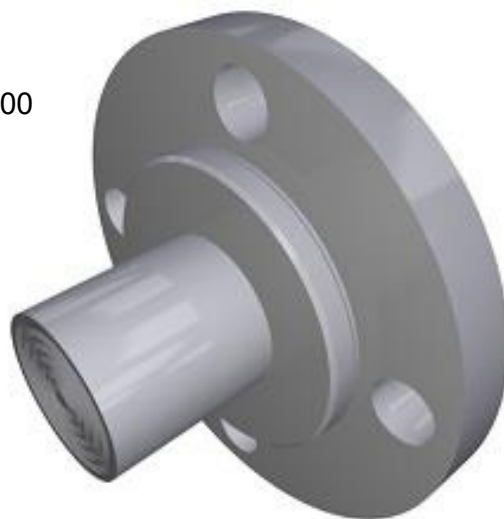


ANSI RTJ Flange Flush Ring Dimensions

| Flange Size                                        | "A"<br>¾" NPT | "A"<br>½" NPT | "B"   | "C"   | "F"   | Groove # |
|----------------------------------------------------|---------------|---------------|-------|-------|-------|----------|
| 2"-150#                                            | 1.50"         | 1.70"         | 4.00" | 2.12" | 3.25" | R29      |
| 3"-150#                                            | 1.50"         | 1.70"         | 5.25" | 3.60" | 4.50" | R36      |
| 4"-150#                                            | 1.50"         | 1.70"         | 6.75" | 3.60" | 5.88" | R23      |
| 2"-300#                                            | 1.63"         | 1.83"         | 4.25" | 2.12" | 3.25" | R31      |
| 3"-300#                                            | 1.63"         | 1.83"         | 5.75" | 3.60" | 4.88" | R37      |
| 4"-300#                                            | 1.63"         | 1.83"         | 6.88" | 3.60" | 5.88" | R23      |
| 2"-600#                                            | 1.63"         | 1.83"         | 4.25" | 2.12" | 3.25" | R31      |
| 3"-600#                                            | 1.63"         | 1.83"         | 5.75" | 3.60" | 4.88" | R37      |
| 4"-600#                                            | 1.63"         | 1.83"         | 6.88" | 3.60" | 5.88" | R24      |
| 2"-900#                                            | 1.63"         | 1.83"         | 4.88" | 2.12" | 3.75" | R31      |
| 3"-900#                                            | 1.63"         | 1.83"         | 6.12" | 3.60" | 4.88" | R37      |
| 4"-900#                                            | 1.63"         | 1.83"         | 7.12" | 3.60" | 5.88" | R24      |
| 2"-1500#                                           | 1.63"         | 1.83"         | 4.88" | 2.12" | 3.75" | R35      |
| 3"-1500#                                           | 1.63"         | 1.83"         | 6.62" | 3.60" | 5.38" | R39      |
| 4"-1500#                                           | 1.63"         | 1.83"         | 7.62" | 3.60" | 6.38" | R26      |
| 2"-2500#                                           | 1.63"         | 1.83"         | 5.25" | 2.12" | 4.00" | R32      |
| 3"-2500#                                           | 1.75"         | 1.95"         | 6.62" | 3.60" | 5.00" | R38      |
| 4"-2500#                                           | 1.88"         | 2.08"         | 7.99" | 3.60" | 6.18" |          |
| Other Sizes Available on Request – Consult Factory |               |               |       |       |       |          |

## Applications & Features

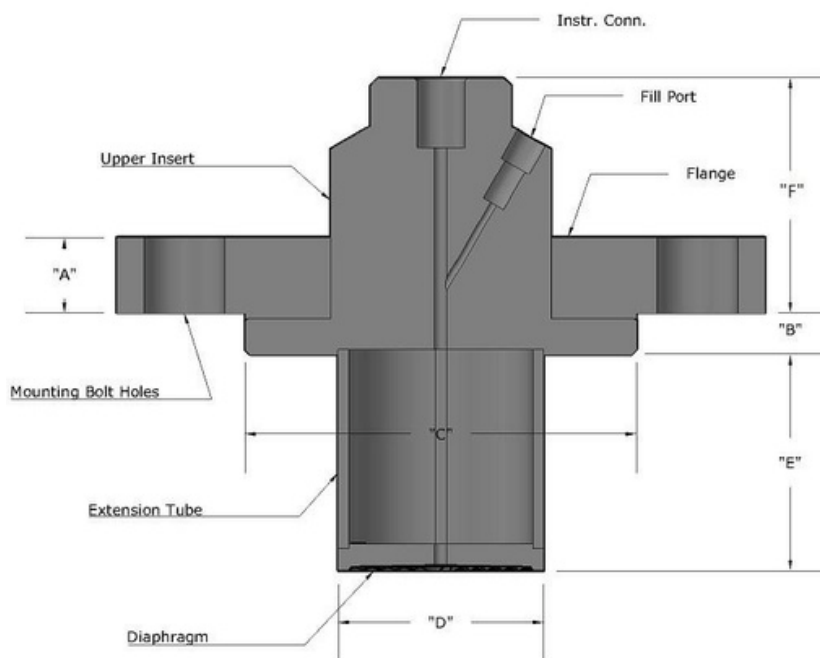
- Flanged Seal with extended diaphragm for Off-Line process connection
- Enable flush installation on pipe or heavily insulated tanks.
- Standard flange sizes from ANSI 2" to 4".
- Additional sizes available on request
- Standard flange ratings from ANSI Class 150 to ANSI Class 2500
- Custom extension lengths and diameters are available
- Other flange standards available



## Ordering Information

| Base Model                 |      |                       |                                            |
|----------------------------|------|-----------------------|--------------------------------------------|
|                            | HFE- | Flanged Extended seal |                                            |
| Type                       |      |                       |                                            |
|                            | A    | ANSI Raised Face (RF) | Rotatable Flange                           |
|                            | B    | ANSI Raised Face (RF) | Non-Rotatable Flange                       |
|                            | F    | ANSI Raised Face (FF) | Flat Face Non-Rotatable                    |
|                            | R    | ANSI RING Joint (RTJ) | Flange Rotatable Flange                    |
|                            | D    | DIN (RF) EN1092-1     | Rotatable Flange                           |
|                            | E    | DIN (RF) EN1092-1     | Non-Rotatable Flange                       |
| Inst. Connection           |      |                       |                                            |
|                            | W    | Weld Connection       | (Not available with Titanium or Zirconium) |
|                            | 2    | 1/4" NPT              |                                            |
|                            | 4    | 1/2" NPT              |                                            |
| Upper Insert               |      |                       |                                            |
|                            | S6   | 316 / 316LSS          |                                            |
|                            | TI   | Titanium              | (Required with Titanium wetted materials)  |
|                            | Z7   | Zirconium 702         | (Required with Zirconium wetted materials) |
| Process Connection Size    |      |                       |                                            |
|                            | 20   | 2.0"                  | 1.90" Ext, Diameter Standard               |
|                            | 30   | 3.0"                  | 2.80" Ext, Diameter Standard               |
|                            | 40   | 4.0"                  | 3.70" Ext, Diameter Standard               |
|                            | C0   | DN50                  | 1.90" Ext, Diameter Standard               |
|                            | D0   | DN80                  | 2.80" Ext, Diameter Standard               |
|                            | E0   | DN100                 | 3.70" Ext, Diameter Standard               |
|                            | F0   | DN125                 | 3.70" Ext, Diameter Standard               |
| Process Connection Rating  |      |                       |                                            |
|                            | A    | 150#                  |                                            |
|                            | B    | 300#                  |                                            |
|                            | C    | 600#                  |                                            |
|                            | D    | 900#                  |                                            |
| CONTINUED ON THE NEXT PAGE |      |                       |                                            |

|                                    |             |                                                 |                                                 |
|------------------------------------|-------------|-------------------------------------------------|-------------------------------------------------|
|                                    |             | <b>CONTINUED FROM THE PREVIOUS PAGE</b>         |                                                 |
|                                    | <b>E</b>    | 1500#                                           |                                                 |
|                                    | <b>F</b>    | 2500#                                           |                                                 |
|                                    | <b>G</b>    | PN 10/40                                        | Use with DN25, DN40, DN50                       |
|                                    | <b>H</b>    | PN 10/16                                        | Use with DN80, DN100, DN125                     |
|                                    | <b>J</b>    | PN 25/40                                        | Use with DN80, DN100, DN125                     |
|                                    | <b>K</b>    | PN 63/100                                       | Use with DN25, DN40                             |
|                                    | <b>L</b>    | PN 63                                           | Use with DN50, DN80, DN100, DN125               |
|                                    | <b>M</b>    | PN 100                                          | Use with DN50, DN80, DN100, DN125               |
| <b>Flange Material</b>             |             |                                                 |                                                 |
|                                    | <b>S6</b>   | 316/316L                                        |                                                 |
|                                    | <b>CS</b>   | Carbon Steel                                    |                                                 |
| <b>Extension / Wetted Material</b> |             |                                                 |                                                 |
|                                    | <b>S6</b>   | 316 / 316LSS                                    |                                                 |
|                                    | <b>S4</b>   | 304 / 304LSS                                    |                                                 |
|                                    | <b>C2</b>   | Alloy 20                                        |                                                 |
|                                    | <b>HC</b>   | Alloy C-276                                     |                                                 |
|                                    | <b>HB</b>   | Alloy B-3                                       |                                                 |
|                                    | <b>M4</b>   | Alloy 400                                       |                                                 |
|                                    | <b>I6</b>   | Alloy 600                                       |                                                 |
|                                    | <b>DP</b>   | Alloy 2205                                      |                                                 |
|                                    | <b>NI</b>   | Nickel 201 /200                                 |                                                 |
|                                    | <b>TI</b>   | Titanium                                        |                                                 |
|                                    | <b>Z7</b>   | Zirconium 702                                   |                                                 |
| <b>Extension Length</b>            |             |                                                 |                                                 |
|                                    | <b>0200</b> | 2.00 Inch                                       |                                                 |
|                                    | <b>0400</b> | 4.00 Inch                                       |                                                 |
|                                    | <b>0600</b> | 6.00 Inch                                       |                                                 |
|                                    | <b>0800</b> | 8.00 Inch                                       |                                                 |
|                                    | <b>XXXX</b> | Length as specified                             | (Examples: 3.5" Enter 0350, 11.5" Enter 1150)   |
| <b>Diaphragm Material</b>          |             |                                                 |                                                 |
|                                    | <b>S6</b>   | 316 / 316LSS                                    |                                                 |
|                                    | <b>S4</b>   | 304 / 304LSS                                    |                                                 |
|                                    | <b>C2</b>   | Alloy 20                                        |                                                 |
|                                    | <b>HC</b>   | Alloy C-276                                     |                                                 |
|                                    | <b>HB</b>   | Alloy B-3                                       |                                                 |
|                                    | <b>M4</b>   | Monel 400                                       |                                                 |
|                                    | <b>I6</b>   | Alloy 600                                       |                                                 |
|                                    | <b>DP</b>   | Alloy 2205                                      |                                                 |
|                                    | <b>NI</b>   | Nickel 201 /200                                 |                                                 |
|                                    | <b>TI</b>   | Titanium (Titanium wetted part required)        |                                                 |
|                                    | <b>Z7</b>   | Zirconium 702 (Zirconium wetted parts required) |                                                 |
| <b>Options</b>                     |             |                                                 |                                                 |
|                                    | <b>/AU</b>  | Gold Plated 0.0003 (7.5 microns) Thick          | ASTM B488, TYPE III, GRADE A                    |
|                                    | <b>/A2</b>  | Gold Plated 0.0007 (17.5 microns) Thick         | ASTM B488, TYPE III, GRADE A                    |
|                                    | <b>/A4</b>  | Gold Plated 0.001 (25 microns) Thick            | ASTM B488, TYPE III, GRADE A                    |
|                                    | <b>/NS</b>  | PTFE Coated Diaphragm                           | (Non-Stick Only - Not for corrosion protection) |
|                                    | <b>/JB</b>  | w/ Jack Bolt Holes & Flange Retaining Ring      |                                                 |
|                                    | <b>/SD</b>  | Special extension diameter as specified         | (Example: 2.50" Enter 250)                      |
|                                    | <b>/MC</b>  | Material cert w/ MTR's                          |                                                 |



### HFE – Standard Seal Dimensions

| ANSI Flange Size | Diaph. Diameter | Type | "A"   | Flange Diameter | "B"   | "C"   | "D"   | "E"            | "F"   | Bolt Qty., Hole Diameter, Bolt Circle Diameter |
|------------------|-----------------|------|-------|-----------------|-------|-------|-------|----------------|-------|------------------------------------------------|
| 2"-150#          | 1.9"            | RF   | 0.75" | 6.00"           | 0.33" | 3.62" | 1.9"  | Order Specific | 2.23" | (4X), 0.75Ø, 4.75Øb.c.                         |
| 3"-150#          | 2.8"            | RF   | 0.94" | 7.50"           | 0.33" | 5.00" | 2.8"  | Order Specific | 2.23" | (4X), 0.75Ø, 6.00Øb.c.                         |
| 4"-150#          | 3.5"            | RF   | 0.94" | 9.00"           | 0.33" | 6.19" | 3.7"  | Order Specific | 2.23" | (8X), 0.75Ø, 7.50Øb.c.                         |
| 2"-300#          | 1.9"            | RF   | 0.88" | 6.50"           | 0.33" | 3.62" | 1.9"  | Order Specific | 2.23" | (8X), 0.75Ø, 5.00Øb.c.                         |
| 3"-300#          | 2.8"            | RF   | 1.12" | 8.25"           | 0.33" | 5.00" | 2.8"  | Order Specific | 2.23" | (8X), 0.88Ø, 6.62Øb.c.                         |
| 4"-300#          | 3.5"            | RF   | 1.25" | 10.00"          | 0.33" | 6.19" | 3.7"  | Order Specific | 2.23" | (8X), 0.88Ø, 7.88Øb.c.                         |
| 2"-600#          | 1.9"            | RF   | 1.25" | 6.50"           | 0.33" | 3.62" | 1.9"  | Order Specific | 2.23" | (8X), 0.75Ø, 5.00Øb.c.                         |
| 3"-600#          | 2.8"            | RF   | 1.50" | 8.25"           | 0.33" | 5.00" | 2.8"  | Order Specific | 2.23" | (8X), 0.88Ø, 6.62Øb.c.                         |
| 4"-600#          | 3.5"            | RF   | 1.75" | 10.75"          | 0.33" | 6.19" | 3.7"4 | Order Specific | 2.23" | (8X), 1.00Ø, 8.50Øb.c.                         |
| 2"-900#          | 1.9"            | RF   | 1.75" | 8.50"           | 0.33" | 3.62" | 1.9"  | Order Specific | 2.23" | (8X), 1.00Ø, 6.50Øb.c.                         |
| 3"-900#          | 2.8"            | RF   | 1.75" | 9.50"           | 0.33" | 5.00" | 2.8"  | Order Specific | 2.23" | (8X), 1.00Ø, 7.50Øb.c.                         |
| 4"-900#          | 3.5"            | RF   | 2.00" | 11.50"          | 0.33" | 6.19" | 3.7"  | Order Specific | 2.66" | (8X), 1.25Ø, 9.25Øb.c.                         |
| 2"-1500#         | 1.9"            | RF   | 1.75" | 8.50"           | 0.33" | 3.62" | 1.9"  | Order Specific | 2.23" | (8X), 1.00Ø, 6.50Øb.c.                         |
| 3"-1500#         | 2.8"            | RF   | 2.13" | 10.50"          | 0.33" | 5.00" | 2.8"  | Order Specific | 2.66" | (8X), 1.25Ø, 8.00Øb.c.                         |
| 4"-1500#         | 3.5"            | RF   | 2.38" | 12.25"          | 0.33" | 6.19" | 3.7"  | Order Specific | 3.31" | (8X), 1.38Ø, 9.50Øb.c.                         |
| 2"-2500#         | 1.9"            | RF   | 2.25" | 9.25"           | 0.33" | 3.62" | 1.9"  | Order Specific | 2.66" | (8X), 1.12Ø, 6.75Øb.c.                         |
| 3"-2500#         | 2.8"            | RF   | 2.87" | 12.00"          | 0.33" | 5.00" | 2.8"  | Order Specific | 3.31" | (8X), 1.38Ø, 9.00Øb.c.                         |

Additional flange standards and custom extension lengths and dimensions available on request. Consult Factory

## Applications & Features

- Welded saddle flange seal for on-line pipe applications
- Standard sizes for 3" pipe and 4" and larger pipe.
- Standard pressure rating to 1500 PSI
- Custom configurations available per application. Consult factory
- Replacement uppers available for other manufacturer's saddles. Consult factory



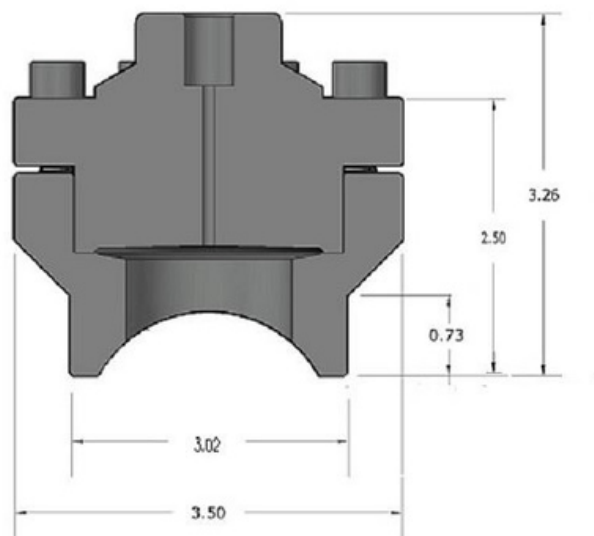
## Ordering Information

| Base Model              |             |                                                                                     |
|-------------------------|-------------|-------------------------------------------------------------------------------------|
|                         | <b>HSD-</b> | Saddle Seal                                                                         |
| Inst. Connection        |             |                                                                                     |
|                         | <b>W</b>    | Weld Connection ( Not available with Titanium or Zirconium)                         |
|                         | <b>2</b>    | 1/4" NPT                                                                            |
|                         | <b>4</b>    | 1/2" NPT                                                                            |
| Upper Material          |             |                                                                                     |
|                         | <b>S6</b>   | 316 / 316LSS                                                                        |
|                         | <b>TI</b>   | Titanium (Required with Titanium diaphragm)                                         |
|                         | <b>Z7</b>   | Zirconium 702 (Required with Zirconium diaphragm)                                   |
| Process Connection Size |             |                                                                                     |
|                         | <b>3</b>    | For 3 Inch Pipe (8 bolt 1500 PSI Max) <b>Standard</b>                               |
|                         | <b>4</b>    | For 4 Inch and larger pipe (8 bolt 1500 PSI Max) <b>Standard</b>                    |
|                         | <b>5</b>    | For 3 Inch Pipe (6 bolt option) (1000 PSI Max)                                      |
|                         | <b>6</b>    | For 4 Inch and larger pipe (6 bolt option) (1000 PSI Max)                           |
|                         | <b>X</b>    | Other Manufacturer's replacement upper as specified                                 |
|                         | <b>A</b>    | Upper Only Ashcroft 3" or less pipe Ashcroft 205, 206, 207 upper 3" or less pipe    |
|                         | <b>B</b>    | Upper Only Ashcroft 4" & larger pipe Ashcroft 205, 206, 207 upper 4" or larger pipe |
| Lower Material          |             |                                                                                     |
|                         | <b>NN</b>   | Not Provided                                                                        |
|                         | <b>S6</b>   | 316 / 316LSS                                                                        |
|                         | <b>S4</b>   | 304 / 304LSS                                                                        |
|                         | <b>S1</b>   | 321SS                                                                               |
|                         | <b>S7</b>   | 347SS                                                                               |
|                         | <b>C2</b>   | Alloy 20                                                                            |
|                         | <b>HC</b>   | Alloy C-276                                                                         |
|                         | <b>HB</b>   | Alloy B-2                                                                           |
|                         | <b>M4</b>   | Monel 400                                                                           |
|                         | <b>I6</b>   | Alloy 600                                                                           |
|                         | <b>DP</b>   | Alloy 2205                                                                          |
|                         | <b>NI</b>   | Nickel 200                                                                          |
|                         | <b>TI</b>   | Titanium                                                                            |
|                         | <b>Z7</b>   | Zirconium 702                                                                       |
|                         | <b>CS</b>   | Carbon Steel                                                                        |
|                         |             |                                                                                     |
|                         |             | <b>CONTINUED ON THE NEXT PAGE</b>                                                   |

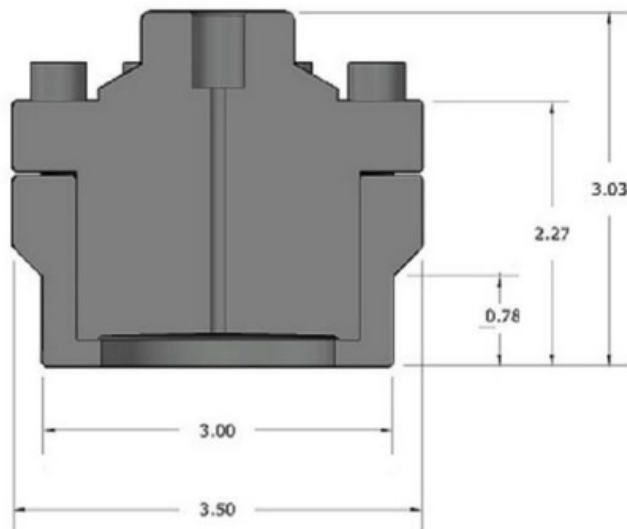
|                    |            | CONTINUED FROM PREVIOUS PAGE                                    |                                                 |
|--------------------|------------|-----------------------------------------------------------------|-------------------------------------------------|
| Diaphragm Material |            |                                                                 |                                                 |
|                    | <b>S6</b>  | 316 / 316LSS                                                    |                                                 |
|                    | <b>S4</b>  | 304 / 304LSS                                                    |                                                 |
|                    | <b>S1</b>  | 321SS                                                           |                                                 |
|                    | <b>S7</b>  | 347SS                                                           |                                                 |
|                    | <b>TA</b>  | Tantalum                                                        |                                                 |
|                    | <b>C2</b>  | Alloy 20                                                        |                                                 |
|                    | <b>HC</b>  | Alloy C-276                                                     |                                                 |
|                    | <b>HB</b>  | Alloy B-2                                                       |                                                 |
|                    | <b>M4</b>  | Monel 400                                                       |                                                 |
|                    | <b>I6</b>  | Alloy 600                                                       |                                                 |
|                    | <b>DP</b>  | Alloy 2205                                                      |                                                 |
|                    | <b>NI</b>  | Nickel 201 /200                                                 |                                                 |
|                    | <b>TI</b>  | Titanium                                                        | (Titanium upper required)                       |
|                    | <b>Z7</b>  | Zirconium 702                                                   | (Zirconium upper required)                      |
| Gasket Mat.        |            |                                                                 |                                                 |
|                    | <b>K4</b>  | Klinger C4401 ( Standard)                                       | 450 F Max                                       |
|                    | <b>GF</b>  | Grafoil                                                         | 700 F Max                                       |
|                    | <b>GL</b>  | Gylon 3510                                                      | 300F Max                                        |
|                    | <b>TF</b>  | PTFE (o-ring)                                                   | 350 F Max                                       |
|                    | <b>VI</b>  | Viton (o-ring)                                                  | 400 F max                                       |
|                    | <b>BN</b>  | Buna-N (o-ring)                                                 | 250 F Max                                       |
|                    | <b>KZ</b>  | Kalrez (o-ring)                                                 | 500 F Max                                       |
| Bolting            |            |                                                                 |                                                 |
|                    | <b>NN</b>  | Not supplied; Standard for other manufacturer replacement upper |                                                 |
|                    | <b>CS</b>  | Grade 8 Zinc                                                    |                                                 |
|                    | <b>S4</b>  | Plated 304SS                                                    |                                                 |
|                    | <b>S6</b>  | 316SS                                                           |                                                 |
| Options            |            |                                                                 |                                                 |
|                    | <b>/AU</b> | Gold Plated 0.0003 (7.5 microns) Thick                          | ASTM B488, TYPE III, GRADE A                    |
|                    | <b>/A2</b> | Gold Plated 0.0007 (17.5 microns) Thick                         | ASTM B488, TYPE III, GRADE A                    |
|                    | <b>/A4</b> | Gold Plated 0.001 (25 microns) Thick                            | ASTM B488, TYPE III, GRADE A                    |
|                    | <b>/NS</b> | PTFE Coated Diaphragm                                           | (Non-Stick Only - Not for corrosion protection) |
|                    | <b>/MC</b> | Material cert with MTR's                                        |                                                 |

## HSD Saddle Seal Dimensions

### HSD for 3" pipe

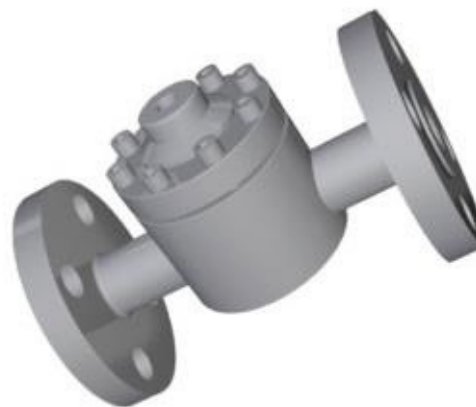


### HSD for 4" and larger pipe



## Applications & Features

- Various connections for on-line pipe applications
- Pipe sizes from ½" and larger pipe
- Socket Weld, Stub-End Weld and Flanged designs
- Custom configurations available per application. Consult factory
- Replacement upper assemblies for other manufacturer's designs
- Consult factory

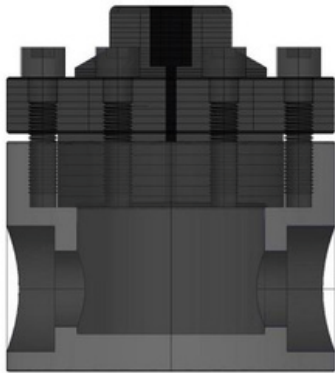


## Ordering Information

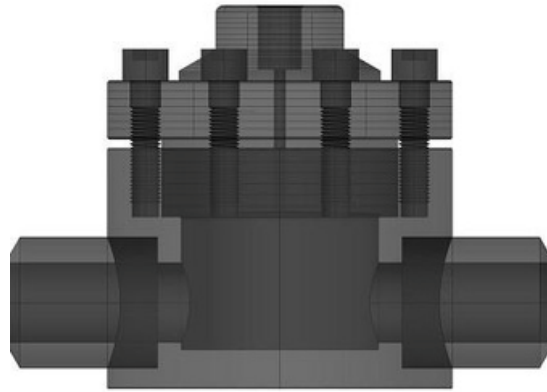
| Base Model              |     |                                                                      |
|-------------------------|-----|----------------------------------------------------------------------|
|                         | HFN | Flow Thru In-Line Seal                                               |
| Inst. Connection        |     |                                                                      |
|                         | W   | Weld (Not available with Titanium or Zirconium)                      |
|                         | 2   | Connection                                                           |
|                         | 4   | 1/4" NPT                                                             |
| Upper Material          |     | 1/2" NPT                                                             |
|                         | S6  | 316 / 316LSS                                                         |
|                         | TI  | Titanium (Required with Titanium diaphragm)                          |
|                         | Z7  | Zirconium 702 (Required with Zirconium diaphragm)                    |
| Process Connection      |     |                                                                      |
|                         | S   | Socket Weld                                                          |
|                         | B   | Pipe Butt Weld                                                       |
|                         | T   | Pipe Threaded                                                        |
|                         | F   | Pipe Flanged                                                         |
| Process Connection Size |     |                                                                      |
|                         | 05  | 1/2" Pipe                                                            |
|                         | 07  | 3/4" Pipe                                                            |
|                         | 10  | 1.0" pipe                                                            |
|                         | 15  | 1-1/2" Pipe                                                          |
|                         | 20  | 2.0" Pipe                                                            |
|                         | 30  | 3.0" Pipe                                                            |
|                         | 40  | 4.0" Pipe                                                            |
| Connection Rating       |     |                                                                      |
|                         | 4   | Sch. 40 Pipe, Use for Socket Weld, Butt Weld and threaded Connection |
|                         | 8   | Sch. 80 Pipe, Use for Socket Weld, Butt Weld and threaded Connection |
|                         | A   | 150# Flange                                                          |
|                         | B   | 300# Flange                                                          |
| Lower Material          |     |                                                                      |
|                         | NN  | Not Provided                                                         |
|                         | S6  | 316 / 316LSS                                                         |
|                         | S4  | 304 / 304LSS                                                         |
|                         | C2  | Alloy 20                                                             |
|                         | HC  | Alloy C-276                                                          |
|                         | HB  | Alloy B-3                                                            |
|                         | M4  | Monel 400                                                            |
|                         | I6  | Alloy 600                                                            |
|                         | DP  | Alloy 2205                                                           |
|                         |     | CONTINUED ON NEXT PAGE                                               |

|                       |            |                                                                       |           |
|-----------------------|------------|-----------------------------------------------------------------------|-----------|
|                       |            | <b>CONTINUED FROM PREVIOUS PAGE</b>                                   |           |
|                       | <b>NI</b>  | Nickel 200                                                            |           |
|                       | <b>TI</b>  | Titanium                                                              |           |
|                       | <b>Z7</b>  | Zirconium 702                                                         |           |
| <b>Diaphragm Mat.</b> |            |                                                                       |           |
|                       | <b>S6</b>  | 316 / 316LSS                                                          |           |
|                       | <b>S4</b>  | 304 / 304LSS                                                          |           |
|                       | <b>TA</b>  | Tantalum                                                              |           |
|                       | <b>C2</b>  | Alloy 20                                                              |           |
|                       | <b>HC</b>  | Alloy C-276                                                           |           |
|                       | <b>M4</b>  | Monel 400                                                             |           |
|                       | <b>HB</b>  | Alloy B-3                                                             |           |
|                       | <b>I6</b>  | Alloy 600                                                             |           |
|                       | <b>DP</b>  | Alloy 2205                                                            |           |
|                       | <b>NI</b>  | Nickel 201/200                                                        |           |
|                       | <b>TI</b>  | Titanium                                                              |           |
|                       | <b>Z7</b>  | Zirconium 702                                                         |           |
| <b>Gasket Mat.</b>    |            |                                                                       |           |
|                       | <b>K4</b>  | Klinger C4401 ( Standard)                                             | 450 F Max |
|                       | <b>GF</b>  | Grafoil                                                               | 700 F Max |
|                       | <b>GL</b>  | Gylon 3510                                                            | 300 F Max |
|                       | <b>TF</b>  | PTFE (O-ring)                                                         | 350 F Max |
|                       | <b>VI</b>  | Viton (O-ring)                                                        | 400 F Max |
|                       | <b>BN</b>  | Buna-N (O-ring)                                                       | 250 F Max |
|                       | <b>KZ</b>  | Kalrez (O-ring)                                                       | 500 F Max |
| <b>Bolting</b>        |            |                                                                       |           |
|                       | <b>NN</b>  | Not supplied; Standard for other manufacturer's replacement uppers    |           |
|                       | <b>CS</b>  | Grade 8 Zinc Plated                                                   |           |
|                       | <b>S4</b>  | 304SS                                                                 |           |
|                       | <b>S6</b>  | 316SS                                                                 |           |
| <b>Options</b>        |            |                                                                       |           |
|                       | <b>/AU</b> | Gold Plated 0.0003 (7.5 microns) Thick ASTM B488, TYPE III, GRADE A   |           |
|                       | <b>/A2</b> | Gold Plated 0.0007 (17.5 microns) Thick ASTM B488, TYPE III, GRADE A  |           |
|                       | <b>/A4</b> | Gold Plated 0.001 (25 microns) Thick ASTM B488, TYPE III, GRADE A     |           |
|                       | <b>/NS</b> | PTFE Coated Diaphragm (Non-Stick Only - Not for corrosion protection) |           |
|                       | <b>/MC</b> | Material cert with MTR's                                              |           |

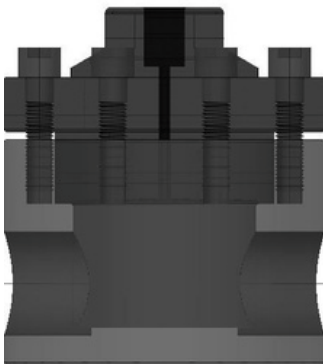
# Consult factory for dimensions specific to pipe size and application



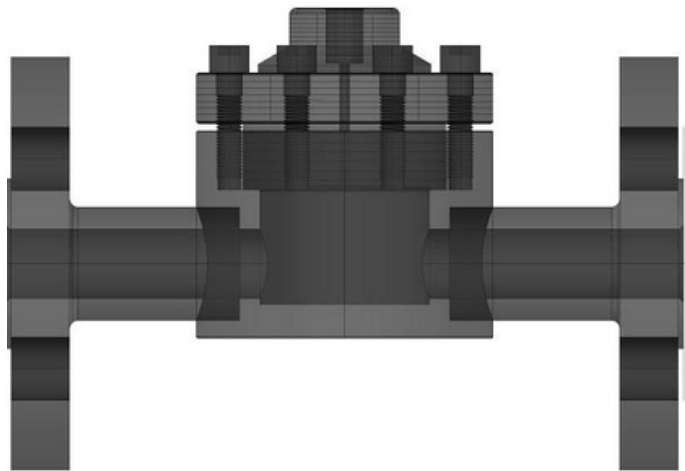
HFN Socket Weld Connection



HFN Butt Weld Connection



HFN Threaded Connection



HFN Flanged Connection

## Applications & Features

- Interchangeability with other manufacturers designs
- Other connection designs may be available per application. Consult factory

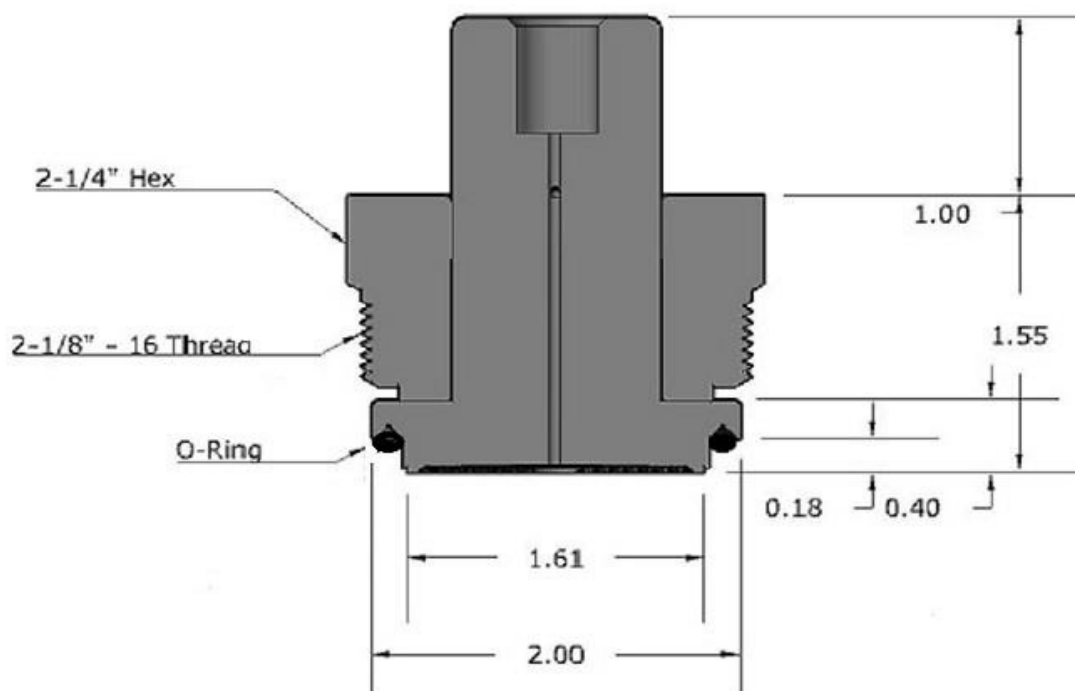


## Ordering Information

| Base Model            |     |                                                   |
|-----------------------|-----|---------------------------------------------------|
|                       | HUC | Union Connection Seal                             |
| Type                  |     |                                                   |
|                       | A   | 2-1/8"-16 Male Union Nut 316LSS      2000 PSI MWP |
| Instrument Connection |     |                                                   |
|                       | W   | Weld Connection                                   |
|                       | 2   | 1/4" NPT                                          |
|                       | 4   | 1/2" NPT                                          |
| Body Material         |     |                                                   |
|                       | S6  | 316 / 316LSS                                      |
|                       | S4  | 304 / 304LSS                                      |
|                       | S1  | 321SS                                             |
|                       | S7  | 347SS                                             |
|                       | C2  | Alloy 20                                          |
|                       | HC  | Alloy C-276                                       |
|                       | HB  | Alloy B-3                                         |
|                       | M4  | Monel 400                                         |
|                       | I6  | Alloy 600                                         |
|                       | DP  | Alloy 2205                                        |
|                       | NI  | Nickel 200                                        |
|                       | TI  | Titanium                                          |
|                       | Z7  | Zirconium                                         |
| Diaphragm             |     |                                                   |
|                       | S6  | 316 / 316LSS                                      |
|                       | S4  | 304 / 304LSS                                      |
|                       | S1  | 321SS                                             |
|                       | S7  | 347SS                                             |
|                       | C2  | Alloy 20                                          |
|                       | HC  | Alloy C-276                                       |
|                       | HB  | Alloy B-3                                         |
|                       | M4  | Monel 400                                         |
|                       | I6  | Alloy 600                                         |
|                       | DP  | Alloy 2205                                        |
|                       | NI  | Nickel 200                                        |
|                       | TI  | Titanium                                          |
|                       | Z7  | Zirconium                                         |
|                       |     | CONTINUED ON NEXT PAGE                            |

|                    |            | CONTINUED FROM PREVIOUS PAGE                                          |
|--------------------|------------|-----------------------------------------------------------------------|
| <b>Gasket Mat.</b> |            |                                                                       |
|                    | <b>TF</b>  | PTFE O-ring                                                           |
| <b>Options</b>     |            |                                                                       |
|                    | <b>/AU</b> | Gold Plated 0.0003 (7.5 microns) Thick ASTM B488, TYPE III, GRADE A   |
|                    | <b>/A2</b> | Gold Plated 0.0007 (17.5 microns) Thick ASTM B488, TYPE III, GRADE A  |
|                    | <b>/A4</b> | Gold Plated 0.001 (25 microns) Thick ASTM B488, TYPE III, GRADE A     |
|                    | <b>/NS</b> | PTFE Coated Diaphragm (Non-Stick Only - Not for Corrosion Protection) |
|                    | <b>/MC</b> | Material cert with MTR's                                              |

## HUC Union Connection Seal Dimensions



## Applications & Features

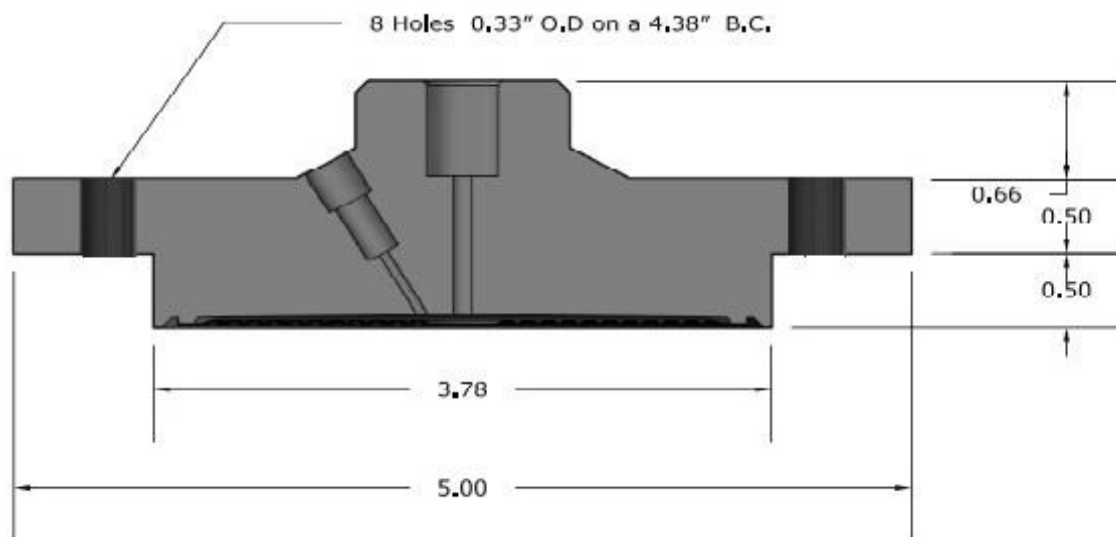
- Chemical Tee or Wedge Flanged Seal to fit flow wedge applications
- 300 PSI maximum working pressure
- Body material always matches the diaphragm material



## Ordering Information

| Base Model         |      |                                                                       |
|--------------------|------|-----------------------------------------------------------------------|
|                    | HCT- | Chemical Tee / Wedge Seal                                             |
| Inst. Connection   |      |                                                                       |
|                    | W    | Weld Connection ( Not available with Titanium or Zirconium)           |
|                    | 2    | 1/4" NPT                                                              |
|                    | 4    | 1/2" NPT                                                              |
| Body Material      |      |                                                                       |
|                    | S6   | 316 / 316LSS                                                          |
|                    | S4   | 304 / 304LSS                                                          |
|                    | C2   | Alloy 20                                                              |
|                    | HC   | Alloy C-276                                                           |
|                    | HB   | Alloy B-2                                                             |
|                    | M4   | Monel 400                                                             |
|                    | DP   | Alloy 2205                                                            |
|                    | NI   | Nickel 201/200                                                        |
|                    | TI   | Titanium                                                              |
|                    | Z7   | Zirconium 702                                                         |
| Diaphragm Material |      |                                                                       |
|                    | S6   | 316 / 316LSS                                                          |
|                    | S4   | 304 / 304LSS                                                          |
|                    | C2   | Alloy 20                                                              |
|                    | HC   | Alloy C-276                                                           |
|                    | HB   | Alloy B-3                                                             |
|                    | M4   | Monel 400                                                             |
|                    | I6   | Alloy 600                                                             |
|                    | DP   | Alloy 2205                                                            |
|                    | NI   | Nickel 201/200                                                        |
|                    | TI   | Titanium                                                              |
|                    | Z7   | Zirconium 702                                                         |
| Options            |      |                                                                       |
|                    | /AU  | Gold Plated 0.0003 (7.5 microns) Thick ASTM B488, TYPE III, GRADE A   |
|                    | /A2  | Gold Plated 0.0007 (17.5 microns) Thick ASTM B488, TYPE III, GRADE A  |
|                    | /A4  | Gold Plated 0.001 (25 microns) Thick ASTM B488, TYPE III, GRADE A     |
|                    | /NS  | PTFE Coated Diaphragm (Non-Stick Only - Not for corrosion protection) |
|                    | /MC  | Material cert with MTR's                                              |

## HCT Chemical Tee / Wedge Seal Dimensional Information



## Applications & Features

- Pulp and paper industry standard seals for on-line applications.
- Interchangeability with many other manufacturers' designs
- Other connection designs may be available per application. Consult factory



## Ordering Information

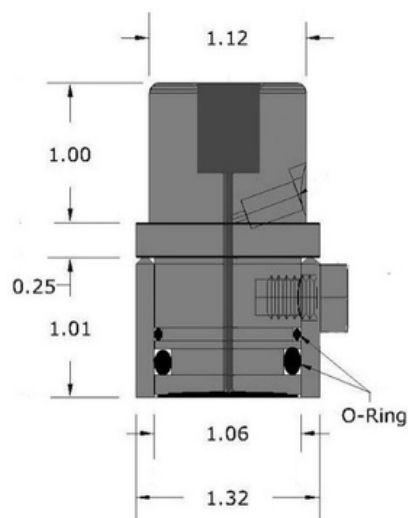
| Base Model            |             |                                                                           |
|-----------------------|-------------|---------------------------------------------------------------------------|
|                       | <b>HPP-</b> | Pulp and Paper Seal                                                       |
| Type                  |             |                                                                           |
|                       | <b>A</b>    | 1" Flush Mount Sleeve Type 1 bolt connection 300 PSI MWP                  |
|                       | <b>B</b>    | 1.5" Flush Sleeve Mount 2 bolt connection 300 PSI MWP                     |
|                       | <b>C</b>    | 1.5" Flush Mount M44 x1.25" Threaded connection 600 PSI MWP               |
|                       | <b>D</b>    | 1.0" Flush Mount 1-3/32-20 UN Threaded 600 PSI MWP                        |
|                       | <b>E</b>    | Flanged Pulp & Paper Seal DN48 600 PSI MWP                                |
|                       | <b>P</b>    | Pulp/Paper G1" Ball Valve Conn. <b>(PASVE)</b> 2500 PSI MWP               |
| Instrument Connection |             |                                                                           |
|                       | <b>W</b>    | Weld Connection                                                           |
|                       | <b>2</b>    | 1/4" NPT                                                                  |
|                       | <b>4</b>    | 1/2" NPT                                                                  |
|                       | <b>5</b>    | 1/4" NPTM                                                                 |
|                       | <b>6</b>    | 1/2" NPTM                                                                 |
|                       | <b>7</b>    | 1/2" NPTM Weld Plug <b>For Welding to 1/2"NPTF Instrument</b>             |
| Body Material         |             |                                                                           |
|                       | <b>S6</b>   | 316 / 316LSS                                                              |
|                       | <b>HC</b>   | Alloy C-276                                                               |
| Diaphragm             |             |                                                                           |
|                       | <b>S6</b>   | 316LSS                                                                    |
|                       | <b>HC</b>   | Alloy C-276                                                               |
| Lower Ferrule / Spud  |             |                                                                           |
|                       | <b>NN</b>   | Without                                                                   |
|                       | <b>S6</b>   | 316 / 316LSS                                                              |
|                       | <b>HC</b>   | Alloy C-276                                                               |
| Gasket Mat.           |             |                                                                           |
|                       | <b>VI</b>   | Viton Type A, B, E                                                        |
|                       | <b>GL</b>   | Gylon 3510 Type C & D                                                     |
|                       | <b>NN</b>   | No Gasket Type C, D, P                                                    |
| Options               |             |                                                                           |
|                       | <b>/HS</b>  | Welding Heat Sink Provided 316LSS                                         |
|                       | <b>/AU</b>  | Gold Plated 0.0003 (7.5 microns) Thick <b>ASTMB488, TYPE III, GRADE A</b> |
|                       |             | <b>CONTINUED ON NEXT PAGE</b>                                             |

|  |            |                                         |                                                 |
|--|------------|-----------------------------------------|-------------------------------------------------|
|  |            | <b>CONTINUED FROM PREVIOUS PAGE</b>     |                                                 |
|  | <b>/A2</b> | Gold Plated 0.0007 (17.5 microns) Thick | ASTM B488, TYPEIII, GRADE A                     |
|  | <b>/A4</b> | Gold Plated 0.001 (25 microns) Thick    | ASTM B488, TYPEIII, GRADE A                     |
|  | <b>/NS</b> | PTFE Coated Diaphragm                   | (Non-Stick Only - Not for corrosion protection) |
|  | <b>/MC</b> | Material cert with MTR's                |                                                 |
|  | <b>/WG</b> | w/Groove for weld isolation             | <b>Type HPP-C only</b>                          |

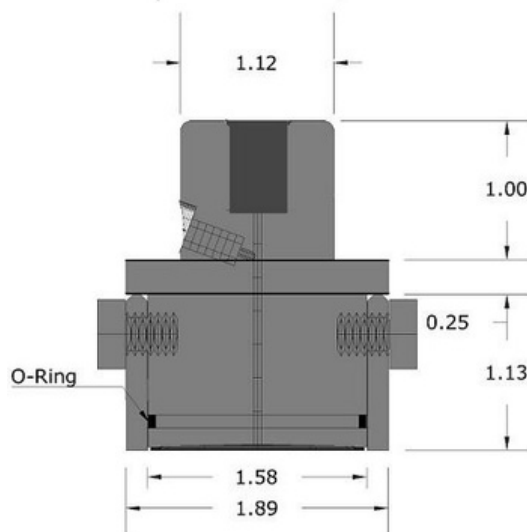
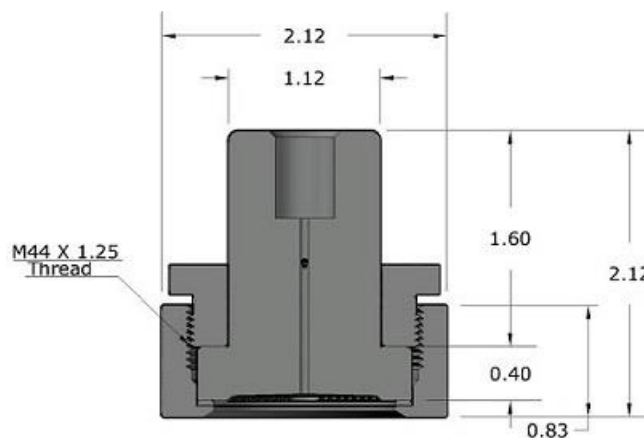
## HPP Pulp &amp; Paper Seal Dimensions

**HPP-A**

1.0" Flush Sleeve Connection

**HPP-B**

1.5" Flush Sleeve Connection

**HPP-C**1.5" Flush M44x1.25  
Threaded Connection

## Applications & Features

- Sanitary food, beverage and pharmaceutical seals
- Tri-Clamp®, and Cherry Burrell I-line ® connections for sanitary piping systems
- Industry standard tank spud connections
- Other connection types available on request. Consult factory

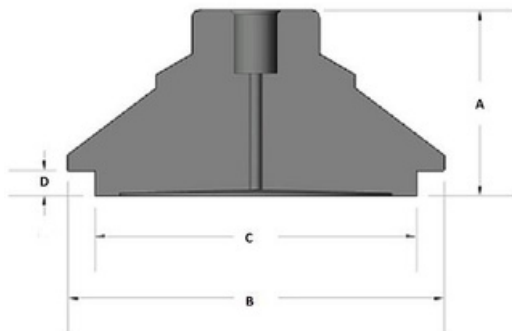


## Ordering Information

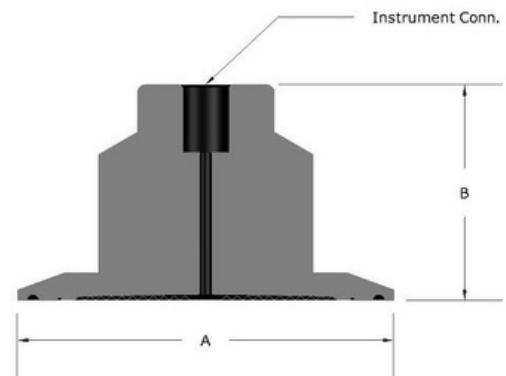
| Base Model            |      |                                    |
|-----------------------|------|------------------------------------|
|                       | HSA- | Sanitary Seal                      |
| Type                  |      |                                    |
|                       | A    | Tri-Clamp                          |
|                       | B    | Cherry Burrell "I" Line            |
|                       | D    | Varivent Connection                |
|                       | E    | DIN11851 Threaded Conn.            |
|                       | F    | SMS 1145 Union Nut                 |
|                       | C    | Tank Spud                          |
| Size                  |      |                                    |
|                       | 15   | 1.5" Type A,B, F                   |
|                       | 20   | 2.0" Type A,B , F                  |
|                       | 25   | 2.5" Type A,B                      |
|                       | 30   | 3.0" Type A,B                      |
|                       | 40   | 4.0" Type A,B                      |
|                       | V1   | Type F - DN25 (Varivent Only)      |
|                       | V2   | Type N - DN40 (Varivent Only)      |
|                       | D2   | DN25 (11851)                       |
|                       | D3   | DN32 (11851)                       |
|                       | D4   | DN40 (11851)                       |
|                       | D5   | DN50 (11851)                       |
|                       | 60   | Industry Standard Tank Spud Type C |
| Extension Length      |      |                                    |
|                       | N    | Not Applicable Types A, B, D, E    |
|                       | 2    | 2 Inch Type C                      |
|                       | 6    | 6 Inch Type C                      |
| Instrument Connection |      |                                    |
|                       | W    | Weld                               |
|                       | 2    | Connection                         |
|                       | 4    | 1/4" NPT                           |
| Body Material         |      | 1/2" NPT                           |
|                       | S6   | 316 / 316LSS                       |
|                       | HC   | Alloy C-276                        |
| Diaphragm             |      |                                    |
|                       | S6   | 316LSS                             |
|                       | HC   | Alloy C-276                        |
|                       |      |                                    |
|                       |      |                                    |
|                       |      | CONTINUED ON NEXT PAGE             |

| CONTINUED FROM PREVIOUS PAGE |            |                                            |
|------------------------------|------------|--------------------------------------------|
| <b>Lower Weld Spud</b>       |            |                                            |
|                              | <b>NN</b>  | Without or Not Required for Type A,B, D, E |
|                              | <b>S6</b>  | 316 / 316LSS                               |
|                              | <b>HC</b>  | Alloy C-276                                |
| <b>Gasket Mat.</b>           |            |                                            |
|                              | <b>NN</b>  | Not Provided Type A,B                      |
|                              | <b>EP</b>  | Ethylene Propylene Type C Only             |
| <b>Options</b>               |            |                                            |
|                              | <b>/C</b>  | SS Clamp Type C Only                       |
|                              | <b>/E</b>  | Electro-polished                           |
|                              | <b>/SF</b> | Surface Finish Certificate                 |
|                              | <b>/CH</b> | Custom Height (Example: 1.50" Enter 150)   |
|                              | <b>/MC</b> | Material cert with MTR's                   |

## HSA Sanitary Seal Dimensions

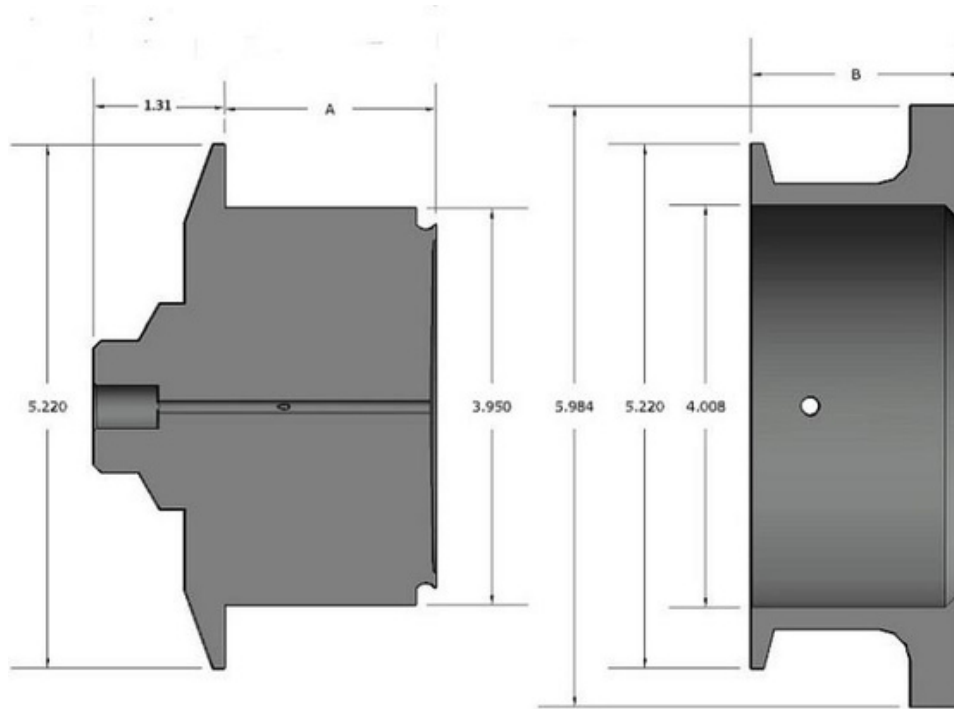


| HSA-B CB I-Line |       |       |       |      |
|-----------------|-------|-------|-------|------|
| Size            | "A"   | "B"   | "C"   | "D"  |
| 1.5"            | 1.90" | 2.00" | 1.74" | .20" |
| 2.0"            | 1.90" | 2.64" | 2.24" | .26" |
| 3.0"            | 1.90" | 3.88" | 3.31" | .31" |
| 4.0"            | 1.90" | 4.88" | 4.30" | .31" |



| HSA-A Tri-Clamp |       |       |
|-----------------|-------|-------|
| Size            | "A"   | "B"   |
| 1.5"            | 1.98" | 2.05" |
| 2.0"            | 2.51" | 2.05" |
| 3.0"            | 3.57" | 2.05" |
| 4.0"            | 4.68" | 2.05" |

## HSA Sanitary Seal Dimensions



Tank Spud Seal

Tank Spud

| HSA-C Tank Spud  |      |      |
|------------------|------|------|
| Size<br>(Length) | "A"  | "B"  |
| 2"               | 2.10 | 2.10 |
| 6"               | 6.10 | 6.10 |

## Applications & Features

- Custom “Direct Mount” transmitter flanges for various transmitter brands
- Custom low volume transmitter flanges for capillary for various transmitter brands
- Capillary available in four internal diameters with SS armor or SS PVC coated armor
- Low volume SS nipple mounting and direct mounting to instruments
- Cooling Element available in 4” and custom lengths for higher temperature applications

## Ordering Information

| Base Model             |      |                                                                                                             |
|------------------------|------|-------------------------------------------------------------------------------------------------------------|
|                        | HAF- | System Attachment & Fill                                                                                    |
| Type                   |      |                                                                                                             |
|                        | A    | Direct to instrument <span>All following digits should be N except for Fill</span>                          |
|                        | N    | 2" Low volume nipple                                                                                        |
|                        | D    | Direct Mount DP/GP (Dual Side Transmitter), <span>Haygor custom low volume direct mount adaptor</span>      |
|                        | G    | Direct Mount GP Inline Transmitter , <span>Transmitter w/ 1/2" Female NPT or weld conn.</span>              |
|                        | C    | Capillary (Base 1 to 5 feet)                                                                                |
|                        | E    | Cooling Element Standard 4 Inch Length Other lengths available                                              |
|                        | T    | Low Volume Tee Manifold (LVTM) <span>Must Specify Model LVTM configuration as a separate part number</span> |
| Attachment Position    |      |                                                                                                             |
|                        | N    | Not Applicable - GP unit only                                                                               |
|                        | B    | Both High and Low Side of DP unit                                                                           |
|                        | H    | High Side of DP unit                                                                                        |
|                        | L    | Low side of DP Unit                                                                                         |
| Length                 |      |                                                                                                             |
|                        | NN.N | None Direct / Nipple                                                                                        |
|                        | XX.X | Specify Length Capillary, Cooling Element                                                                   |
| Units                  |      |                                                                                                             |
|                        | N-   | Not Applicable                                                                                              |
|                        | F-   | Feet (Capillary)                                                                                            |
|                        | M-   | Meters (Capillary)                                                                                          |
|                        | I-   | Inches (Cooling Element or DP Direct mount)                                                                 |
| Armor Type             |      |                                                                                                             |
|                        | N    | None ( Direct or Nipple)                                                                                    |
|                        | S    | SS Armor                                                                                                    |
|                        | P    | PVC Armor (White PVC over SS)                                                                               |
| Capillary I.D.         |      |                                                                                                             |
|                        | N    | None ( Direct or Nipple)                                                                                    |
|                        | 3    | .030" I.D.                                                                                                  |
|                        | 4    | .041" I.D.                                                                                                  |
|                        | 5    | .055" I.D.                                                                                                  |
|                        | 7    | .075" I.D.                                                                                                  |
| Instrument Connection  |      |                                                                                                             |
|                        | N    | None ( Direct or Nipple)                                                                                    |
|                        | 1    | Welded                                                                                                      |
|                        | 2    | 1/4" NPTM                                                                                                   |
|                        | 3    | 1/4" NPTF                                                                                                   |
|                        | 4    | 1/2" NPTM                                                                                                   |
|                        | 5    | 1/2" NPTF                                                                                                   |
| CONTINUED ON NEXT PAGE |      |                                                                                                             |

|                        |      | CONTINUED FROM PREVIOUS PAGE                                                   |
|------------------------|------|--------------------------------------------------------------------------------|
|                        | 6    | 1/4" NPTM w/Fill Port                                                          |
|                        | 7    | 1/4" NPTF w/Fill Port                                                          |
|                        | 8    | 1/2" NPTM w/Fill Port                                                          |
|                        | 9    | 1/2" NPTF w/Fill Port                                                          |
|                        | B    | 7/16" Welded .43" O.D. (Weld Plug Fits 1/4"NPT, 1/4" NPS, 7/16")               |
|                        | C    | 1/2" NPTM Weld Plug (1/2"NPTF GP Xmtr Close Coupled or w/capillary up to 10' ) |
|                        | B    | 1/2" NPTM Weld Plug w/ Fill Port (1/2"NPTF GP Xmtr w/capillary over 10' )      |
| <b>Seal Connection</b> |      |                                                                                |
|                        | N    | None ( Direct or Nipple)                                                       |
|                        | 1    | Welded ( See option /HS for use with HFP pancake seal)                         |
|                        | 2    | 1/4" NPTM                                                                      |
|                        | 3    | 1/4" NPTF                                                                      |
|                        | 4    | 1/2" NPTM                                                                      |
|                        | 5    | 1/2" NPTF                                                                      |
|                        | 6    | 1/4" NPTM w/Fill Port                                                          |
|                        | 7    | 1/4" NPTF w/Fill Port                                                          |
|                        | 8    | 1/2" NPTM w/Fill Port                                                          |
|                        | 9    | 1/2" NPTF w/Fill Port                                                          |
|                        | B    | 7/16" Welded .43" O.D. (Weld Plug Fits 1/4"NPT, 1/4" NPS, 7/16")               |
| <b>Fill Fluid</b>      |      |                                                                                |
|                        | -N   | None ( Dry)                                                                    |
|                        | -A   | Silicone 200-10 -40 to 400°F                                                   |
|                        | -B   | Silicone 704 +50 to 640°F                                                      |
|                        | -C   | Silicone 705 +68 to 700°F                                                      |
|                        | -D   | Syltherm 800 -40 to 600°F                                                      |
|                        | -E   | Syltherm XLT -150 to 500°F                                                     |
|                        | -F   | Halocarbon 6.3 (Inert) -20 to 425°F                                            |
|                        | -G   | Fluorolube FS-5 ( Inert) -20 to 300°F                                          |
|                        | -H   | Krytox 1506 (Inert - Vac. Service) +20 to 400°F                                |
|                        | -Y   | Halocarbon 0.8 (Inert) -160 to 158°F                                           |
|                        | -J   | Neobee M20 0 to 400°F                                                          |
|                        | -K   | Mineral Oil 5 to 482°F                                                         |
|                        | -L   | DC 200-350 (Food Grade) 0 to 572°F                                             |
|                        | -M   | Glycerine (Direct Mount only) +60 to 462°F                                     |
|                        | -P   | Glycerine/H2O +14 to 248°F                                                     |
|                        | -R   | Deionized Water 33 to 200°F                                                    |
|                        | -S   | Silicone 710 45 to 700°F                                                       |
|                        | -T   | PG-1 (White Mineral Oil) 50 to 600°F                                           |
|                        | -U   | IG-4 (White Mineral Oil) 65 to 600°F                                           |
|                        | -V   | Silicone 200-50 -4 to 400°F                                                    |
|                        | -W   | MT-503 -40 to 500°F                                                            |
|                        | -N   | High Temp Liquid Alloy                                                         |
|                        | -X   | Special fill as specified by customer                                          |
| <b>Options</b>         |      |                                                                                |
|                        | /LV  | Option A: Haygor Custom low volume transmitter flange (Specify Model)          |
|                        | /VM  | Option B: Modify existing transmitter flange to minimize volume                |
|                        | /HS  | Handle / Support Tube 4"(For use with HFP Pancake Seal)                        |
|                        | /BW  | Instrument Welded to Seal or Capillary (Threaded Connections)                  |
|                        | /TC  | Temperature Compensated Capillary "DP ONLY"                                    |
|                        | /D   | Special Close-Coupled length Type D Specify in inches                          |
|                        | /HTG | Thermal Guardian Cooling Element, w/Ultra High Temp Fill (-20/535°C)           |

### Pressure / Temperature Rating ANSI B16.5 Flanges

| Temp°F     | Carbon Steel                    |          |          |          |           |           | 316SS                           |          |          |          |           |           |
|------------|---------------------------------|----------|----------|----------|-----------|-----------|---------------------------------|----------|----------|----------|-----------|-----------|
|            | Maximum Working Pressure (PSIG) |          |          |          |           |           | Maximum Working Pressure (PSIG) |          |          |          |           |           |
|            | ANSI 150                        | ANSI 300 | ANSI 600 | ANSI 900 | ANSI 1500 | ANSI 2500 | ANSI 150                        | ANSI 300 | ANSI 600 | ANSI 900 | ANSI 1500 | ANSI 2500 |
| -20 to 100 | 285                             | 740      | 1480     | 2220     | 3705      | 6170      | 275                             | 720      | 1440     | 2160     | 3600      | 6000      |
| 200        | 260                             | 675      | 1350     | 2025     | 3375      | 5625      | 240                             | 620      | 1240     | 1860     | 3095      | 5160      |
| 300        | 230                             | 655      | 1315     | 1970     | 3280      | 2470      | 215                             | 560      | 1120     | 1680     | 2795      | 4660      |
| 400        | 200                             | 635      | 1270     | 1900     | 3170      | 5280      | 195                             | 515      | 1030     | 1540     | 2570      | 4280      |
| 500        | 170                             | 600      | 1200     | 1795     | 2995      | 4990      | 170                             | 480      | 995      | 1435     | 2390      | 3980      |
| 600        | 140                             | 550      | 1095     | 1640     | 2735      | 4560      | 140                             | 450      | 905      | 1355     | 2255      | 3760      |
| 650        | 125                             | 535      | 1075     | 1610     | 2685      | 4475      | 125                             | 445      | 890      | 1330     | 2220      | 3700      |

### Pressure / Temperature Rating Threaded Seals

| Temp°F     | Maximum Working Pressure (PSIG) |      |      |      |      |      |
|------------|---------------------------------|------|------|------|------|------|
|            | 10000                           | 5000 | 2500 | 2000 | 1250 | 1000 |
| -20 to 100 | 10000                           | 5000 | 2500 | 2000 | 1250 | 1000 |
| 200        | 8600                            | 4300 | 2150 | 1930 | 1075 | 965  |
| 300        | 7800                            | 3900 | 1950 | 1560 | 975  | 780  |
| 400        | 7200                            | 3600 | 1800 | 1440 | 900  | 720  |
| 500        | 6600                            | 3300 | 1650 | 1340 | 825  | 670  |
| 650        | 6000                            | 3000 | 1550 | 1240 | 750  | 620  |

### Gasket & O-ring Maximum Temperature

| Model Code | Material                  | Temp°F    |
|------------|---------------------------|-----------|
| <b>K4</b>  | Klinger C4401 ( Standard) | 450 F Max |
| <b>GF</b>  | Grafoil®                  | 700 F Max |
| <b>GL</b>  | Gylon® 3510               | 300F Max  |
| <b>TF</b>  | PTFE (o-ring)             | 350 F Max |
| <b>VI</b>  | Viton® (o-ring)           | 400 F max |
| <b>BN</b>  | Buna-N (o-ring)           | 250 F Max |
| <b>KZ</b>  | Kalrez® (o-ring)          | 500 F Max |

OTHER MATERIALS MAY BE AVAILABLE ON REQUEST - CF

### Fill Fluid

| Model Code | Fluid                          | Temperature Range Limits | Specific Gravity | Viscosity       | Notes                   |
|------------|--------------------------------|--------------------------|------------------|-----------------|-------------------------|
| <b>-A</b>  | Silicone 200-10                | -40 to 400°F             | .935 (25C)       | 10 cs. (25C)    |                         |
| <b>-B</b>  | Silicone 704                   | +50 to 640°F             | 1.07 (25C)       | 39 cs. (25C)    | Vacuum Service          |
| <b>-C</b>  | Silicone 705                   | +68 to 700°F             | 1.09 (25c)       | 175 cs. (25C)   | Vacuum Service          |
| <b>-D</b>  | Syltherm 800                   | -40 to 600°F             | .93 (25C)        | 9.1 cs. (25C)   |                         |
| <b>-E</b>  | Syltherm XLT                   | -150 to 500°F            | .85 (25C)        | 1.4 cs. (25c)   |                         |
| <b>-F</b>  | Halocarbon 6.3 (Inert)         | -20 to 425°F             | 1.87 (37.8c)     | 6.3 cs. (37.8C) | Inert                   |
| <b>-G</b>  | Fluorolube FS-5 ( Inert)       | -20 to 300°F             | 1.85 (38c)       | 6 cs. (38C)     | Inert                   |
| <b>-H</b>  | Krytox 1506(Inert-Vac.Service) | 20 to 400°F              | 1.88 (20 C)      | 62 cs. (20 C)   | Inert / Vacuum Service  |
| <b>-J</b>  | Neobee M20                     | 0 to 400°F               | .918 (25C)       | 9.5 cs. (25C)   | Sanitary / Food Service |
| <b>-L</b>  | DC 200-350(FoodGrade)          | 0 to 572°F               | .97 (25C)        | 350 cs. (25C)   | Sanitary / Food Service |
| <b>-M</b>  | Glycerine (Direct Mt. only)    | 60 to 462°F              | 1.26 (20c)       | 1410 cs. (20C)  | Sanitary / Food Service |
| <b>-P</b>  | Glycerine/H2O (85%/15%)        | 14 to 248°F              | 1.22 (20C)       | 110 cs. (20C)   | Sanitary / Food Service |

OTHER FILL FLUIDS MAY BE AVAILABLE ON REQUEST - C/F

## Applications & Features

- Bleeding / Venting / Calibration / Flushing Bleed Ring
- Held in place by the through bolting for easy installation
- Standard flange sizes from ANSI 2" to 4". Additional sizes available on request
- Pressure ratings to ANSI class 2500.
- Other flange standards available



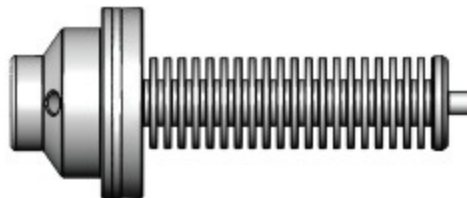
## Ordering Information

| Base Model                |      |                                 |
|---------------------------|------|---------------------------------|
|                           | HBF- | Full Face Bleed Flange          |
| Process Size              |      |                                 |
|                           | 20   | 2" ANSI                         |
|                           | 30   | 3" ANSI                         |
|                           | 40   | 4" ANSI                         |
|                           | C0   | DN50                            |
|                           | D0   | DN80                            |
|                           | E0   | DN100                           |
|                           | XX   | Other as specified              |
| Process Connection Rating |      |                                 |
|                           | A    | 150#                            |
|                           | B    | 300#                            |
|                           | C    | 600#                            |
|                           | D    | 900#                            |
|                           | E    | 1500#                           |
|                           | F    | 2500#                           |
|                           | G    | PN 10/40 DN50                   |
|                           | H    | PN 10/16 DN80, DN100, DN125     |
|                           | J    | PN 25/40 DN80, DN100, DN125     |
|                           | L    | PN 63 DN50, DN80, DN100, DN125  |
|                           | M    | PN 100 DN50, DN80, DN100, DN125 |
|                           | P    | PN 160 DN50, DN80, DN100, DN125 |
|                           | R    | PN 250 DN50, DN80, DN100, DN125 |
| Process Connection Type   |      |                                 |
|                           | A    | ANSI Raised Face                |
|                           | R    | ANSI Ring Joint (RTJ)           |
|                           | D    | DIN Raised Face                 |
| Bleed Connections         |      |                                 |
|                           | A    | Single 1/4" NPTF                |
|                           | B    | Dual 1/4" NPTF                  |
|                           | C    | Single 1/2" NPTF                |
|                           | D    | Dual 1/2" NPTF                  |
|                           | E    | Single 1/4" Pipe Socket Weld    |
|                           | F    | Dual 1/4" Pipe Socket Weld      |
|                           | G    | Single 1/2" Pipe Socket Weld    |
|                           | H    | Dual 1/2" Pipe Socket Weld      |
|                           |      | <b>CONTINUED ON NEXT PAGE</b>   |

|                      |            |                                      |  |
|----------------------|------------|--------------------------------------|--|
|                      |            | <b>CONTINUED FROM PREVIOUS PAGE</b>  |  |
|                      | <b>J</b>   | Single 3/4"NPTF                      |  |
|                      | <b>K</b>   | Dual 3/4" NPTF                       |  |
|                      | <b>L</b>   | Single 1.0" NPTF                     |  |
|                      | <b>M</b>   | Dual 1.0" NPTF                       |  |
|                      | <b>N</b>   | Single 3/4" Pipe Socket Weld         |  |
|                      | <b>P</b>   | Dual 3/4" Pipe Socket Weld           |  |
|                      | <b>Q</b>   | Single 1.0" Pipe Socket Weld         |  |
|                      | <b>R</b>   | Dual 1.0" Pipe Socket Weld           |  |
| <b>Body Material</b> |            |                                      |  |
|                      | <b>S6</b>  | 316 / 316LSS                         |  |
|                      | <b>S4</b>  | 304 / 304LSS                         |  |
|                      | <b>S1</b>  | 321SS                                |  |
|                      | <b>S7</b>  | 347SS                                |  |
|                      | <b>CS</b>  | CS Nickel                            |  |
|                      | <b>C2</b>  | Plated Alloy 20                      |  |
|                      | <b>HC</b>  | Alloy C-276                          |  |
|                      | <b>HB</b>  | Alloy B-3                            |  |
|                      | <b>M4</b>  | Monel 400                            |  |
|                      | <b>I6</b>  | Alloy 600                            |  |
|                      | <b>DP</b>  | Alloy 2205                           |  |
|                      | <b>NI</b>  | Nickel 201/200                       |  |
|                      | <b>TI</b>  | Titanium                             |  |
|                      | <b>Z7</b>  | Zirconium 702                        |  |
| <b>Options</b>       |            |                                      |  |
|                      | <b>/P1</b> | With single pipe plug for flush port |  |
|                      | <b>/P2</b> | With dual pipe plugs for flush port  |  |

## Applications & Features

- Allowing precise pressure measurement of ultra-high temperature processes ranging up to 1200°F (650°C).
- Advanced patented design dissipates heat and acts as an additional temperature barrier between a standard diaphragm seal and the pressure instrument.
- It can be installed with direct mount or capillary mount diaphragm seal systems, attached to gauge pressure or differential pressure and is available with all standard and exotic materials and secondary fill fluids.



## Ordering Information

|                              |             |                  |
|------------------------------|-------------|------------------|
| <b>Base Model</b>            |             |                  |
|                              | <b>HTG-</b> | Thermal Guardian |
| <b>Instrument Connection</b> |             |                  |
|                              | <b>W</b>    | Welded (8mm)     |
| <b>Body Material</b>         |             |                  |
|                              | <b>S6</b>   | 316SS            |

## Instrument Type

## Process Information

## Diaphragm Seal Information

|                            |                                 |                                    |                                              |                                            |                                       |
|----------------------------|---------------------------------|------------------------------------|----------------------------------------------|--------------------------------------------|---------------------------------------|
| <b>Low Side Seal</b>       |                                 | <b>Model</b> _____                 |                                              | <b>Connection Type</b> _____               |                                       |
| <b>Quantity</b> _____      | <b>Process Conn.</b> _____      | <b>Rating</b> _____                | <b>Diaphragm Material</b> _____              |                                            |                                       |
|                            | <b>Wetted Material</b> _____    | <b>Gasket</b> _____                | <b>Bolting</b> _____                         |                                            |                                       |
| <b>Mounting &amp; Fill</b> | <input type="checkbox"/> Direct | <input type="checkbox"/> 2" Nipple | <input type="checkbox"/> 4 " Cooling Element | <input type="checkbox"/> Capillary -Length | _____                                 |
|                            | <b>Fill Fluid</b> _____         |                                    |                                              | <input type="checkbox"/> SS Armor          | <input type="checkbox"/> SS/PVC Armor |





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Threaded  
Sanitary  
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Design Customer Specific  
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Seals and Assemblies  
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Assemblies

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