



## Dixon Sanitary Additional Product Offerings



Literature Order No.:  
DS2012

### Fittings Catalog

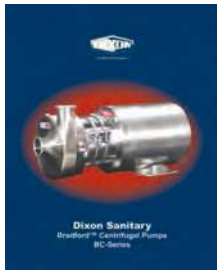
- large array of hygienic fittings and valves
- sizes 1/2" to 12"
- 304 & 316L
- polished and unpolished
- Clamp, Weld, Bevel Seat, European (DIN, RJT, SMS), Pipe, John Perry, Q-Line and I-Line



Literature Order No.:  
EPC2012

### Engineered Products Catalog

- seat valves
- diaphragm valves
- BC Series Sanitary Centrifugal Pump
- ball valves
- butterfly valves
- actuation packages
- sample and check valves



Literature Order No.:  
DSPB0209

### General Pump Brochure

- 6 page brochure featuring the Bradford™ BC Series Sanitary Centrifugal Pump
- list of models available
- mechanical specifications
- family of curves
- seal options



Literature Download

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# Bradford™ High Purity BioPharm Line

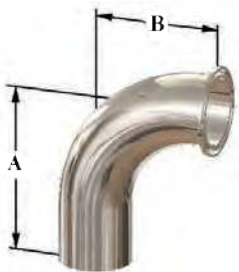
## 90° Weld Elbows



BPE Table #DT-7

Size	A	PL Finish - SF1	PM Finish - SF4
1/2"	3.000	T2S-050PL	T2S-050PM
3/4"	3.000	T2S-075PL	T2S-075PM
1"	3.000	T2S-100PL	T2S-100PM
1 1/2"	3.750	T2S-150PL	T2S-150PM
2"	4.750	T2S-200PL	T2S-200PM
2 1/2"	5.500	T2S-250PL	T2S-250PM
3"	6.250	T2S-300PL	T2S-300PM
4"	8.000	T2S-400PL	T2S-400PM
6"	11.500	T2S-600PL	T2S-600PM

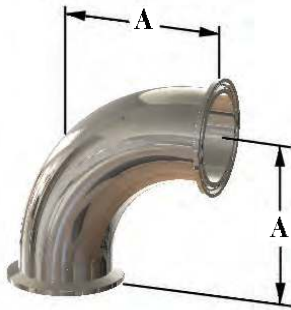
## 90° Clamp x Weld Elbows



BPE Table #DT-12

Size	A	B	PL Finish - SF1	PM Finish - SF4
1/2"	3.000	1.625	T2CM-050PL	T2CM-050PM
3/4"	3.000	1.625	T2CM-075PL	T2CM-075PM
1"	3.000	2.000	T2CM-100PL	T2CM-100PM
1 1/2"	3.750	2.750	T2CM-150PL	T2CM-150PM
2"	4.750	3.500	T2CM-200PL	T2CM-200PM
2 1/2"	5.500	4.250	T2CM-250PL	T2CM-250PM
3"	6.250	5.000	T2CM-300PL	T2CM-300PM
4"	8.000	6.625	T2CM-400PL	T2CM-400PM
6"	11.500	10.500	T2CM-600PL	T2CM-600PM

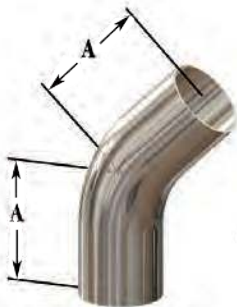
## 90° Clamp x Clamp Elbows



BPE Table #DT-16

Size	A	PL Finish - SF1	PM Finish - SF4
1/2"	1.625	T2CMP-050PL	T2CMP-050PM
3/4"	1.625	T2CMP-075PL	T2CMP-075PM
1"	2.000	T2CMP-100PL	T2CMP-100PM
1 1/2"	2.750	T2CMP-150PL	T2CMP-150PM
2"	3.500	T2CMP-200PL	T2CMP-200PM
2 1/2"	4.250	T2CMP-250PL	T2CMP-250PM
3"	5.000	T2CMP-300PL	T2CMP-300PM
4"	6.625	T2CMP-400PL	T2CMP-400PM
6"	10.500	T2CMP-600PL	T2CMP-600PM

## 45° Weld Elbows



BPE Table #DT-8

Size	A	PL Finish - SF1	PM Finish - SF4
1/2"	2.250	T2KS-050PL	T2KS-050PM
3/4"	2.250	T2KS-075PL	T2KS-075PM
1"	2.250	T2KS-100PL	T2KS-100PM
1 1/2"	2.500	T2KS-150PL	T2KS-150PM
2"	3.000	T2KS-200PL	T2KS-200PM
2 1/2"	3.375	T2KS-250PL	T2KS-250PM
3"	3.625	T2KS-300PL	T2KS-300PM
4"	4.500	T2KS-400PL	T2KS-400PM
6"	6.250	T2KS-600PL	T2KS-600PM

Note: Not all sizes and finishes are stocked

PL Finish – SF1

OD = 32R<sub>a</sub> Mechanically Polished

ID = 20R<sub>a</sub> Mechanically Polished

PM Finish – SF4

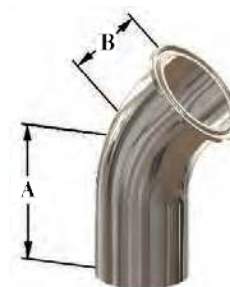
OD = 32R<sub>a</sub> Mechanically Polished

ID = 15R<sub>a</sub> Mechanically Polished and Electropolished

# Bradford™ High Purity BioPharm Line

## 45° Clamp x Weld Elbows

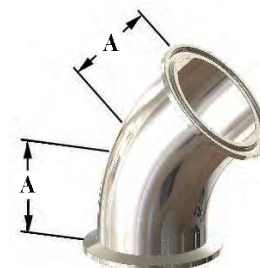
Size	A	B	PL Finish - SF1	PM Finish - SF4
1/2"	2.250	1.000	<i>T2KM-050PL</i>	<i>T2KM-050PM</i>
3/4"	2.250	1.000	<i>T2KM-075PL</i>	<i>T2KM-075PM</i>
1"	2.250	1.125	<i>T2KM-100PL</i>	<i>T2KM-100PM</i>
1 1/2"	2.500	1.438	<i>T2KM-150PL</i>	<i>T2KM-150PM</i>
2"	3.000	1.750	<i>T2KM-200PL</i>	<i>T2KM-200PM</i>
2 1/2"	3.375	2.063	<i>T2KM-250PL</i>	<i>T2KM-250PM</i>
3"	3.625	2.380	<i>T2KM-300PL</i>	<i>T2KM-300PM</i>
4"	4.500	3.125	<i>T2KM-400PL</i>	<i>T2KM-400PM</i>
6"	6.250	5.250	<i>T2KM-600PL</i>	<i>T2KM-600PM</i>



BPE Table #DT-13

## 45° Clamp x Clamp Elbows

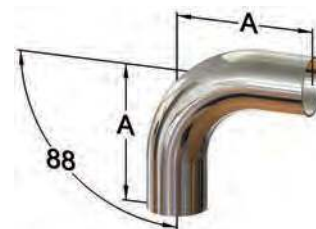
Size	A	PL Finish - SF1	PM Finish - SF4
1/2"	1.000	<i>T2KMP-050PL</i>	<i>T2KMP-050PM</i>
3/4"	1.000	<i>T2KMP-075PL</i>	<i>T2KMP-075PM</i>
1"	1.125	<i>T2KMP-100PL</i>	<i>T2KMP-100PM</i>
1 1/2"	1.438	<i>T2KMP-150PL</i>	<i>T2KMP-150PM</i>
2"	1.750	<i>T2KMP-200PL</i>	<i>T2KMP-200PM</i>
2 1/2"	2.063	<i>T2KMP-250PL</i>	<i>T2KMP-250PM</i>
3"	2.375	<i>T2KMP-300PL</i>	<i>T2KMP-300PM</i>
4"	3.125	<i>T2KMP-400PL</i>	<i>T2KMP-400PM</i>
6"	5.250	<i>T2KMP-600PL</i>	<i>T2KMP-600PM</i>



BPE Table #DT-17

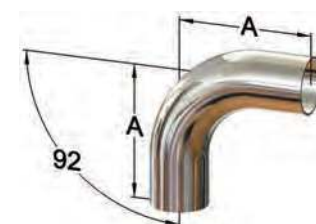
## 88° Weld Elbows

Size	A	PL Finish - SF1	PM Finish - SF4
1/2"	3.060	<i>T2S88-050PL</i>	<i>T2S88-050PM</i>
3/4"	3.060	<i>T2S88-075PL</i>	<i>T2S88-075PM</i>
1"	3.430	<i>T2S88-100PL</i>	<i>T2S88-100PM</i>
1 1/2"	3.800	<i>T2S88-150PL</i>	<i>T2S88-150PM</i>
2"	4.810	<i>T2S88-200PL</i>	<i>T2S88-200PM</i>
2 1/2"	5.560	<i>T2S88-250PL</i>	<i>T2S88-250PM</i>
3"	6.310	<i>T2S88-300PL</i>	<i>T2S88-300PM</i>
4"	8.070	<i>T2S88-400PL</i>	<i>T2S88-400PM</i>
6"	11.580	<i>T2S88-600PL</i>	<i>T2S88-600PM</i>



## 92° Weld Elbows

Size	A	PL Finish - SF1	PM Finish - SF4
1/2"	3.040	<i>T2S92-050PL</i>	<i>T2S92-050PM</i>
3/4"	3.040	<i>T2S92-075PL</i>	<i>T2S92-075PM</i>
1"	3.050	<i>T2S92-100PL</i>	<i>T2S92-100PM</i>
1 1/2"	3.830	<i>T2S92-150PL</i>	<i>T2S92-150PM</i>
2"	4.850	<i>T2S92-200PL</i>	<i>T2S92-200PM</i>
2 1/2"	5.630	<i>T2S92-250PL</i>	<i>T2S92-250PM</i>
3"	6.410	<i>T2S92-300PL</i>	<i>T2S92-300PM</i>
4"	8.210	<i>T2S92-400PL</i>	<i>T2S92-400PM</i>
6"	11.410	<i>T2S92-600PL</i>	<i>T2S92-600PM</i>



Note: Not all sizes and finishes are stocked

PL Finish – SF1

OD = 32R<sub>a</sub> Mechanically Polished

ID = 20R<sub>a</sub> Mechanically Polished

PM Finish – SF4

OD = 32R<sub>a</sub> Mechanically Polished

ID = 15R<sub>a</sub> Mechanically Polished and Electropolished

# Bradford™ High Purity BioPharm Line

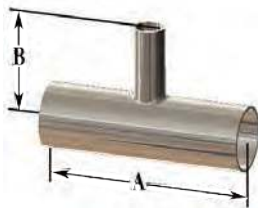
## Weld x Weld x Weld Tees



BPE Table #DT-9

Size	A	B	PL Finish - SF1	PM Finish - SF4
1/2"	3.750	1.875	<i>T7WWW-050PL</i>	<i>T7WWW-050PM</i>
3/4"	4.000	2.000	<i>T7WWW-075PL</i>	<i>T7WWW-075PM</i>
1"	4.250	2.125	<i>T7WWW-100PL</i>	<i>T7WWW-100PM</i>
1 1/2"	4.750	2.375	<i>T7WWW-150PL</i>	<i>T7WWW-150PM</i>
2"	5.750	2.875	<i>T7WWW-200PL</i>	<i>T7WWW-200PM</i>
2 1/2"	6.250	3.125	<i>T7WWW-250PL</i>	<i>T7WWW-250PM</i>
3"	6.750	3.375	<i>T7WWW-300PL</i>	<i>T7WWW-300PM</i>
4"	8.250	4.125	<i>T7WWW-400PL</i>	<i>T7WWW-400PM</i>
6"	11.250	5.625	<i>T7WWW-600PL</i>	<i>T7WWW-600PM</i>

## Weld x Weld x Weld Reducing Tees



BPE Table #DT-10

Size	A	B	PL Finish - SF1	PM Finish - SF4
3/4" x 1/2"	4.000	2.000	<i>T7RWWW-075050PL</i>	<i>T7RWWW-075050PM</i>
1" x 1/2"	4.250	2.125	<i>T7RWWW-100050PL</i>	<i>T7RWWW-100050PM</i>
1" x 3/4"	4.250	2.125	<i>T7RWWW-100075PL</i>	<i>T7RWWW-100075PM</i>
1 1/2" x 1/2"	4.750	2.375	<i>T7RWWW-150050PL</i>	<i>T7RWWW-150050PM</i>
1 1/2" x 3/4"	4.750	2.375	<i>T7RWWW-150075PL</i>	<i>T7RWWW-150075PM</i>
1 1/2" x 1"	4.750	2.375	<i>T7RWWW-150100PL</i>	<i>T7RWWW-150100PM</i>
2" x 1/2"	5.750	2.625	<i>T7RWWW-200050PL</i>	<i>T7RWWW-200050PM</i>
2" x 3/4"	5.750	2.625	<i>T7RWWW-200075PL</i>	<i>T7RWWW-200075PM</i>
2" x 1"	5.750	2.625	<i>T7RWWW-200100PL</i>	<i>T7RWWW-200100PM</i>
2" x 1 1/2"	5.750	2.625	<i>T7RWWW-200150PL</i>	<i>T7RWWW-200150PM</i>
2 1/2" x 3/4"	6.250	2.875	<i>T7RWWW-250075PL</i>	<i>T7RWWW-250075PM</i>
2 1/2" x 1"	6.250	2.875	<i>T7RWWW-250100PL</i>	<i>T7RWWW-250100PM</i>
2 1/2" x 1 1/2"	6.250	2.875	<i>T7RWWW-250150PL</i>	<i>T7RWWW-250150PM</i>
2 1/2" x 2"	6.250	2.875	<i>T7RWWW-250200PL</i>	<i>T7RWWW-250200PM</i>
3" x 1/2"	6.750	3.125	<i>T7RWWW-300050PL</i>	<i>T7RWWW-300050PM</i>
3" x 3/4"	6.750	3.125	<i>T7RWWW-300075PL</i>	<i>T7RWWW-300075PM</i>
3" x 1"	6.750	3.125	<i>T7RWWW-300100PL</i>	<i>T7RWWW-300100PM</i>
3" x 1 1/2"	6.750	3.125	<i>T7RWWW-300150PL</i>	<i>T7RWWW-300150PM</i>
3" x 2"	6.750	3.125	<i>T7RWWW-300200PL</i>	<i>T7RWWW-300200PM</i>
3" x 2 1/2"	6.750	3.125	<i>T7RWWW-300250PL</i>	<i>T7RWWW-300250PM</i>
4" x 1/2"	8.250	3.625	<i>T7RWWW-400050PL</i>	<i>T7RWWW-400050PM</i>
4" x 3/4"	8.250	3.625	<i>T7RWWW-400075PL</i>	<i>T7RWWW-400075PM</i>
4" x 1"	8.250	3.625	<i>T7RWWW-400100PL</i>	<i>T7RWWW-400100PM</i>
4" x 1 1/2"	8.250	3.625	<i>T7RWWW-400150PL</i>	<i>T7RWWW-400150PM</i>
4" x 2"	8.250	3.875	<i>T7RWWW-400200PL</i>	<i>T7RWWW-400200PM</i>
4" x 2 1/2"	8.250	3.875	<i>T7RWWW-400250PL</i>	<i>T7RWWW-400250PM</i>
4" x 3"	8.250	3.875	<i>T7RWWW-400300PL</i>	<i>T7RWWW-400300PM</i>
6" x 3"	11.250	4.875	<i>T7RWWW-600300PL</i>	<i>T7RWWW-600300PM</i>
6" x 4"	11.250	5.125	<i>T7RWWW-600400PL</i>	<i>T7RWWW-600400PM</i>

## Weld x Weld x Clamp Tees



Size	A	B	PL Finish - SF1	PM Finish - SF4
1/2"	3.750	2.250	<i>T7WWM-050PL</i>	<i>T7WWM-050PM</i>
3/4"	4.000	2.375	<i>T7WWM-075PL</i>	<i>T7WWM-075PM</i>
1"	4.250	2.625	<i>T7WWM-100PL</i>	<i>T7WWM-100PM</i>
1 1/2"	4.750	2.875	<i>T7WWM-150PL</i>	<i>T7WWM-150PM</i>
2"	5.750	3.375	<i>T7WWM-200PL</i>	<i>T7WWM-200PM</i>
2 1/2"	6.250	3.625	<i>T7WWM-250PL</i>	<i>T7WWM-250PM</i>
3"	6.750	3.875	<i>T7WWM-300PL</i>	<i>T7WWM-300PM</i>
4"	8.250	4.750	<i>T7WWM-400PL</i>	<i>T7WWM-400PM</i>
6"	11.250	7.125	<i>T7WWM-600PL</i>	<i>T7WWM-600PM</i>

Note: Not all sizes and finishes are stocked

PL Finish – SF1

OD = 32R<sub>a</sub> Mechanically Polished

ID = 20R<sub>a</sub> Mechanically Polished

PM Finish – SF4

OD = 32R<sub>a</sub> Mechanically Polished

ID = 15R<sub>a</sub> Mechanically Polished and Electropolished

# Bradford™ High Purity BioPharm Line

## Clamp x Clamp x Clamp Tees

Size	A	B	PL Finish - SF1	PM Finish - SF4
1/2"	4.500	2.250	<i>T7MP-050PL</i>	<i>T7MP-050PM</i>
3/4"	4.750	2.375	<i>T7MP-075PL</i>	<i>T7MP-075PM</i>
1"	5.250	2.625	<i>T7MP-100PL</i>	<i>T7MP-100PM</i>
1 1/2"	5.750	2.875	<i>T7MP-150PL</i>	<i>T7MP-150PM</i>
2"	6.750	3.375	<i>T7MP-200PL</i>	<i>T7MP-200PM</i>
2 1/2"	7.250	3.625	<i>T7MP-250PL</i>	<i>T7MP-250PM</i>
3"	7.750	3.875	<i>T7MP-300PL</i>	<i>T7MP-300PM</i>
4"	9.500	4.750	<i>T7MP-400PL</i>	<i>T7MP-400PM</i>
6"	14.250	7.125	<i>T7MP-600PL</i>	<i>T7MP-600PM</i>



BPE Table #DT-18

## Clamp x Clamp x Clamp Reducing Tees

Size	A	B	PL Finish - SF1	PM Finish - SF4
3/4" x 1/2"	5.000	2.500	<i>T7RMP-075050PL</i>	<i>T7RMP-075050PM</i>
1" x 1/2"	5.250	2.625	<i>T7RMP-100050PL</i>	<i>T7RMP-100050PM</i>
1" x 3/4"	5.250	2.625	<i>T7RMP-100075PL</i>	<i>T7RMP-100075PM</i>
1 1/2" x 1/2"	5.750	2.875	<i>T7RMP-150050PL</i>	<i>T7RMP-150050PM</i>
1 1/2" x 3/4"	5.750	2.875	<i>T7RMP-150075PL</i>	<i>T7RMP-150075PM</i>
1 1/2" x 1"	5.750	2.875	<i>T7RMP-150100PL</i>	<i>T7RMP-150100PM</i>
2" x 1/2"	6.750	3.125	<i>T7RMP-200050PL</i>	<i>T7RMP-200050PM</i>
2" x 3/4"	6.750	3.125	<i>T7RMP-200075PL</i>	<i>T7RMP-200075PM</i>
2" x 1"	6.750	3.125	<i>T7RMP-200100PL</i>	<i>T7RMP-200100PM</i>
2" x 1 1/2"	6.750	3.125	<i>T7RMP-200150PL</i>	<i>T7RMP-200150PM</i>
2 1/2" x 1/2"	7.250	3.375	<i>T7RMP-250050PL</i>	<i>T7RMP-250050PM</i>
2 1/2" x 3/4"	7.250	3.375	<i>T7RMP-250075PL</i>	<i>T7RMP-250075PM</i>
2 1/2" x 1"	7.250	3.375	<i>T7RMP-250100PL</i>	<i>T7RMP-250100PM</i>
2 1/2" x 1 1/2"	7.250	3.375	<i>T7RMP-250150PL</i>	<i>T7RMP-250150PM</i>
2 1/2" x 2"	7.250	3.375	<i>T7RMP-250200PL</i>	<i>T7RMP-250200PM</i>
3" x 1/2"	7.750	3.625	<i>T7RMP-300050PL</i>	<i>T7RMP-300050PM</i>
3" x 3/4"	7.750	3.625	<i>T7RMP-300075PL</i>	<i>T7RMP-300075PM</i>
3" x 1"	7.750	3.625	<i>T7RMP-300100PL</i>	<i>T7RMP-300100PM</i>
3" x 1 1/2"	7.750	3.625	<i>T7RMP-300150PL</i>	<i>T7RMP-300150PM</i>
3" x 2"	7.750	3.625	<i>T7RMP-300200PL</i>	<i>T7RMP-300200PM</i>
3" x 2 1/2"	7.750	3.625	<i>T7RMP-300250PL</i>	<i>T7RMP-300250PM</i>
4" x 1/2"	9.500	4.125	<i>T7RMP-400050PL</i>	<i>T7RMP-400050PM</i>
4" x 3/4"	9.500	4.125	<i>T7RMP-400075PL</i>	<i>T7RMP-400075PM</i>
4" x 1"	9.500	4.125	<i>T7RMP-400100PL</i>	<i>T7RMP-400100PM</i>
4" x 1 1/2"	9.500	4.125	<i>T7RMP-400150PL</i>	<i>T7RMP-400150PM</i>
4" x 2"	9.500	4.125	<i>T7RMP-400200PL</i>	<i>T7RMP-400200PM</i>
4" x 2 1/2"	9.500	4.125	<i>T7RMP-400250PL</i>	<i>T7RMP-400250PM</i>
4" x 3"	9.500	4.125	<i>T7RMP-400300PL</i>	<i>T7RMP-400300PM</i>
6" x 3"	14.250	5.375	<i>T7RMP-600300PL</i>	<i>T7RMP-600300PM</i>
6" x 4"	14.250	5.750	<i>T7RMP-600400PL</i>	<i>T7RMP-600400PM</i>



BPE Table #DT-19

Note: Not all sizes and finishes are stocked

PL Finish – SF1

OD = 32R<sub>a</sub> Mechanically Polished

ID = 20R<sub>a</sub> Mechanically Polished

PM Finish – SF4

OD = 32R<sub>a</sub> Mechanically Polished

ID = 15R<sub>a</sub> Mechanically Polished and Electropolished

# Bradford™ High Purity BioPharm Line

## Weld x Weld x Clamp Short Outlet Tees



BPE Table #DT-15

Size	A	B	PL Finish - SF1	PM Finish - SF4
1/2"	3.750	1.000	T7WWMS-050PL	T7WWMS-050PM
3/4"	4.000	1.125	T7WWMS-075PL	T7WWMS-075PM
1"	4.250	1.125	T7WWMS-100PL	T7WWMS-100PM
1 1/2"	4.750	1.375	T7WWMS-150PL	T7WWMS-150PM
2"	5.750	1.625	T7WWMS-200PL	T7WWMS-200PM
2 1/2"	6.250	1.875	T7WWMS-250PL	T7WWMS-250PM
3"	6.750	2.125	T7WWMS-300PL	T7WWMS-300PM
4"	8.250	2.750	T7WWMS-400PL	T7WWMS-400PM
6"	11.250	4.625	T7WWMS-600PL	T7WWMS-600PM

## Weld x Weld x Clamp Short Outlet Reducing Tees



BPE Table #DT-14

Size	A	B	PL Finish - SF1	PM Finish - SF4
3/4" x 1/2"	4.000	1.000	T7RWWMS-075050PL	T7RWWMS-075050PM
1" x 1/2"	4.250	1.125	T7RWWMS-100050PL	T7RWWMS-100050PM
1" x 3/4"	4.250	1.125	T7RWWMS-100075PL	T7RWWMS-100075PM
1 1/2" x 1/2"	4.750	1.375	T7RWWMS-150050PL	T7RWWMS-150050PM
1 1/2" x 3/4"	4.750	1.375	T7RWWMS-150075PL	T7RWWMS-150075PM
1 1/2" x 1"	4.750	1.375	T7RWWMS-150100PL	T7RWWMS-150100PM
2" x 1/2"	5.750	1.625	T7RWWMS-200050PL	T7RWWMS-200050PM
2" x 3/4"	5.750	1.625	T7RWWMS-200075PL	T7RWWMS-200075PM
2" x 1"	5.750	1.625	T7RWWMS-200100PL	T7RWWMS-200100PM
2" x 1 1/2"	5.750	1.625	T7RWWMS-200150PL	T7RWWMS-200150PM
2 1/2" x 1/2"	6.250	1.875	T7RWWMS-250050PL	T7RWWMS-250050PM
2 1/2" x 3/4"	6.250	1.875	T7RWWMS-250075PL	T7RWWMS-250075PM
2 1/2" x 1"	6.250	1.875	T7RWWMS-250100PL	T7RWWMS-250100PM
2 1/2" x 1 1/2"	6.250	1.875	T7RWWMS-250150PL	T7RWWMS-250150PM
2 1/2" x 2"	6.250	1.875	T7RWWMS-250200PL	T7RWWMS-250200PM
3" x 1/2"	6.750	2.125	T7RWWMS-300050PL	T7RWWMS-300050PM
3" x 3/4"	6.750	2.125	T7RWWMS-300075PL	T7RWWMS-300075PM
3" x 1"	6.750	2.125	T7RWWMS-300100PL	T7RWWMS-300100PM
3" x 1 1/2"	6.750	2.125	T7RWWMS-300150PL	T7RWWMS-300150PM
3" x 2"	6.750	2.125	T7RWWMS-300200PL	T7RWWMS-300200PM
3" x 2 1/2"	6.750	2.125	T7RWWMS-300250PL	T7RWWMS-300250PM
4" x 1/2"	8.250	2.625	T7RWWMS-400050PL	T7RWWMS-400050PM
4" x 3/4"	8.250	2.625	T7RWWMS-400075PL	T7RWWMS-400075PM
4" x 1"	8.250	2.625	T7RWWMS-400100PL	T7RWWMS-400100PM
4" x 1 1/2"	8.250	2.625	T7RWWMS-400150PL	T7RWWMS-400150PM
4" x 2"	8.250	2.625	T7RWWMS-400200PL	T7RWWMS-400200PM
4" x 2 1/2"	8.250	2.625	T7RWWMS-400250PL	T7RWWMS-400250PM
4" x 3"	8.250	2.625	T7RWWMS-400300PL	T7RWWMS-400300PM
6" x 3"	11.250	3.625	T7RWWMS-600300PL	T7RWWMS-600300PM
6" x 4"	11.250	3.750	T7RWWMS-600400PL	T7RWWMS-600400PM

## Clamp x Clamp x Clamp Short Outlet Tees



BPE Table #DT-27

Size	A	B	PL Finish - SF1	PM Finish - SF4
1/2"	4.500	1.000	T7MPS-050PL	T7MPS-050PM
3/4"	4.750	1.125	T7MPS-075PL	T7MPS-075PM
1"	5.250	1.125	T7MPS-100PL	T7MPS-100PM
1 1/2"	5.750	1.375	T7MPS-150PL	T7MPS-150PM
2"	6.750	1.625	T7MPS-200PL	T7MPS-200PM
2 1/2"	7.250	1.875	T7MPS-250PL	T7MPS-250PM
3"	7.750	2.125	T7MPS-300PL	T7MPS-300PM
4"	9.500	2.750	T7MPS-400PL	T7MPS-400PM
6"	14.250	4.625	T7MPS-600PL	T7MPS-600PM

Note: Not all sizes and finishes are stocked

PL Finish – SF1  
OD = 32R<sub>a</sub> Mechanically Polished  
ID = 20R<sub>a</sub> Mechanically Polished

PM Finish – SF4  
OD = 32R<sub>a</sub> Mechanically Polished  
ID = 15R<sub>a</sub> Mechanically Polished and Electropolished



# Bradford™ High Purity BioPharm Line

## Clamp x Clamp x Clamp Short Outlet Reducing Tees

Size	A	B	PL Finish - SF1	PM Finish - SF4
3/4" x 1/2"	5.000	1.000	T7RMPS-075050PL	T7RMPS-075050PM
1" x 1/2"	5.125	1.125	T7RMPS-100050PL	T7RMPS-100050PM
1" x 3/4"	5.125	1.125	T7RMPS-100075PL	T7RMPS-100075PM
1 1/2" x 1/2"	5.750	1.375	T7RMPS-150050PL	T7RMPS-150050PM
1 1/2" x 3/4"	5.750	1.375	T7RMPS-150075PL	T7RMPS-150075PM
1 1/2" x 1"	5.750	1.375	T7RMPS-150100PL	T7RMPS-150100PM
2" x 1/2"	6.750	1.625	T7RMPS-200050PL	T7RMPS-200050PM
2" x 3/4"	6.750	1.625	T7RMPS-200075PL	T7RMPS-200075PM
2" x 1"	6.750	1.625	T7RMPS-200100PL	T7RMPS-200100PM
2" x 1 1/2"	6.750	1.625	T7RMPS-200150PL	T7RMPS-200150PM
2 1/2" x 1/2"	7.250	1.875	T7RMPS-250050PL	T7RMPS-250050PM
2 1/2" x 3/4"	7.250	1.875	T7RMPS-250075PL	T7RMPS-250075PM
2 1/2" x 1"	7.250	1.875	T7RMPS-250100PL	T7RMPS-250100PM
2 1/2" x 1 1/2"	7.250	1.875	T7RMPS-250150PL	T7RMPS-250150PM
2 1/2" x 2"	7.250	1.875	T7RMPS-250200PL	T7RMPS-250200PM
3" x 1/2"	7.750	2.125	T7RMPS-300050PL	T7RMPS-300050PM
3" x 3/4"	7.750	2.125	T7RMPS-300075PL	T7RMPS-300075PM
3" x 1"	7.750	2.125	T7RMPS-300100PL	T7RMPS-300100PM
3" x 1 1/2"	7.750	2.125	T7RMPS-300150PL	T7RMPS-300150PM
3" x 2"	7.750	2.125	T7RMPS-300200PL	T7RMPS-300200PM
3" x 2 1/2"	7.750	2.125	T7RMPS-300250PL	T7RMPS-300250PM
4" x 1/2"	9.500	2.625	T7RMPS-400050PL	T7RMPS-400050PM
4" x 3/4"	9.500	2.625	T7RMPS-400075PL	T7RMPS-400075PM
4" x 1"	9.500	2.625	T7RMPS-400100PL	T7RMPS-400100PM
4" x 1 1/2"	9.500	2.625	T7RMPS-400150PL	T7RMPS-400150PM
4" x 2"	9.500	2.625	T7RMPS-400200PL	T7RMPS-400200PM
4" x 2 1/2"	9.500	2.625	T7RMPS-400250PL	T7RMPS-400250PM
4" x 3"	9.500	2.625	T7RMPS-400300PL	T7RMPS-400300PM
6" x 3"	14.250	3.625	T7RMPS-600300PL	T7RMPS-600300PM
6" x 4"	14.250	3.750	T7RMPS-600400PL	T7RMPS-600400PM



BPE Table #DT-20

## Weld x Weld x Clamp Instrument Tees

Size	A	B	PL Finish - SF1	PM Finish - SF4
1/2" x 1/2"	5.000	.875	T7IWWMS-050150PL	T7IWWMS-050150PM
3/4" x 1/2"	5.000	1.000	T7IWWMS-075150PL	T7IWWMS-075150PM
1" x 1/2"	5.000	1.125	T7IWWMS-100150PL	T7IWWMS-100150PM
1/2" x 2"	5.500	1.000	T7IWWMS-050200PL	T7IWWMS-050200PM
3/4" x 2"	5.500	1.125	T7IWWMS-075200PL	T7IWWMS-075200PM
1" X 2"	5.500	1.250	T7IWWMS-100200PL	T7IWWMS-100200PM
1 1/2" X 2"	5.500	1.500	T7IWWMS-150200PL	T7IWWMS-150200PM



BPE Table #DT-28

## Clamp x Clamp x Clamp Instrument Tees

Size	A	B	PL Finish - SF1	PM Finish - SF4
1/2" x 1/2"	6.000	.875	T7IMPS-050150PL	T7IMPS-050150PM
3/4" x 1/2"	6.000	1.000	T7IMPS-075150PL	T7IMPS-075150PM
1" x 1/2"	6.000	1.125	T7IMPS-100150PL	T7IMPS-100150PM
1/2" x 2"	6.500	1.000	T7IMPS-050200PL	T7IMPS-050200PM
3/4" x 2"	6.500	1.125	T7IMPS-075200PL	T7IMPS-075200PM
1" X 2"	6.500	1.250	T7IMPS-100200PL	T7IMPS-100200PM
1 1/2" X 2"	6.500	1.500	T7IMPS-150200PL	T7IMPS-150200PM



BPE Table #DT-28

Note: Not all sizes and finishes are stocked

PL Finish – SF1

OD = 32R<sub>a</sub> Mechanically Polished

ID = 20R<sub>a</sub> Mechanically Polished

PM Finish – SF4

OD = 32R<sub>a</sub> Mechanically Polished

ID = 15R<sub>a</sub> Mechanically Polished and Electropolished

# Bradford™ High Purity BioPharm Line

## Weld x Weld Concentric Reducers



BPE Table #DT-11

Size	A	PL Finish - SF1	PM Finish - SF4
¾" x ½"	4.00	T31W-075050PL	T31W-075050PM
1" x ½"	4.50	T31W-100050PL	T31W-100050PM
1" x ¾"	4.00	T31W-100075PL	T31W-100075PM
1½" x ½"	5.50	T31W-150050PL	T31W-150050PM
1½" x ¾"	5.00	T31W-150075PL	T31W-150075PM
1½" x 1"	5.00	T31W-150100PL	T31W-150100PM
2" x ½"	7.75	T31W-200050PL	T31W-200050PM
2" x ¾"	7.25	T31W-200075PL	T31W-200075PM
2" x 1"	7.25	T31W-200100PL	T31W-200100PM
2" x 1½"	5.25	T31W-200150PL	T31W-200150PM
2½" x ½"	9.750	T31W-250050PL	T31W-250050PM
2½" x ¾"	9.250	T31W-250075PL	T31W-250075PM
2½" x 1"	9.250	T31W-250100PL	T31W-250100PM
2½" x 1 ½"	7.250	T31W-250150PL	T31W-250150PM
2½" x 2"	5.500	T31W-250200PL	T31W-250200PM
3" x 1"	11.250	T31W-300100PL	T31W-300100PM
3" x 1½"	9.250	T31W-300150PL	T31W-300150PM
3" x 2"	7.500	T31W-300200PL	T31W-300200PM
3" x 2½"	5.500	T31W-300250PL	T31W-300250PM
4" x 1"	15.500	T31W-400100PL	T31W-400100PM
4" x 1½"	13.500	T31W-400150PL	T31W-400150PM
4" x 2"	11.750	T31W-400200PL	T31W-400200PM
4" x 2½"	9.750	T31W-400250PL	T31W-400250PM
4" x 3"	7.750	T31W-400300PL	T31W-400300PM
6" x 3"	10.000	T31W-600300PL	T31W-600300PM
6" x 4"	10.000	T31W-600400PL	T31W-600400PM

## Clamp x Weld Concentric Reducers



BPE Table #DT-26

Size	A	PL Finish - SF1	PM Finish - SF4
¾" x ½"	3.000	T31M-075050PL	T31M-075050PM
1" x ½"	3.500	T31M-100050PL	T31M-100050PM
1" x ¾"	3.000	T31M-100075PL	T31M-100075PM
1½" x ½"	4.500	T31M-150050PL	T31M-150050PM
1½" x ¾"	4.000	T31M-150075PL	T31M-150075PM
1½" x 1"	4.000	T31M-150100PL	T31M-150100PM
2" x ½"	6.500	T31M-200050PL	T31M-200050PM
2" x ¾"	6.000	T31M-200075PL	T31M-200075PM
2" x 1"	6.000	T31M-200100PL	T31M-200100PM
2" x 1½"	4.000	T31M-200150PL	T31M-200150PM
2½" x ½"	8.500	T31M-250050PL	T31M-250050PM
2½" x ¾"	8.000	T31M-250075PL	T31M-250075PM
2½" x 1"	8.000	T31M-250100PL	T31M-250100PM
2½" x 1 ½"	6.000	T31M-250150PL	T31M-250150PM
2½" x 2"	4.250	T31M-250200PL	T31M-250200PM
3" x 1"	10.000	T31M-300100PL	T31M-300100PM
3" x 1½"	8.000	T31M-300150PL	T31M-300150PM
3" x 2"	6.250	T31M-300200PL	T31M-300200PM
3" x 2½"	4.250	T31M-300250PL	T31M-300250PM
4" x 1"	14.125	T31M-400100PL	T31M-400100PM
4" x 1½"	12.125	T31M-400150PL	T31M-400150PM
4" x 2"	10.375	T31M-400200PL	T31M-400200PM
4" x 2½"	8.375	T31M-400250PL	T31M-400250PM
4" x 3"	6.375	T31M-400300PL	T31M-400300PM
6" x 3"	9.000	T31M-600300PL	T31M-600300PM
6" x 4"	9.000	T31M-600400PL	T31M-600400PM

Note: Not all sizes and finishes are stocked

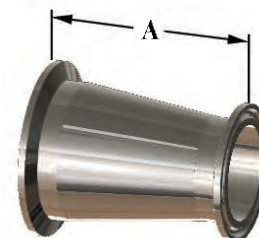
PL Finish – SF1  
OD = 32R<sub>a</sub> Mechanically Polished  
ID = 20R<sub>a</sub> Mechanically Polished

PM Finish – SF4  
OD = 32R<sub>a</sub> Mechanically Polished  
ID = 15R<sub>a</sub> Mechanically Polished and Electropolished

# Bradford™ High Purity BioPharm Line

## Clamp x Clamp Concentric Reducers

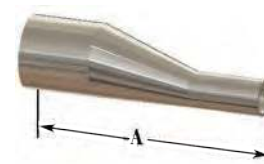
Size	A	PL Finish - SF1	PM Finish - SF4
¾" x ½"	2.000	T3114MP075050PL	T3114MP075050PM
1" x ½"	2.500	T3114MP100050PL	T3114MP100050PM
1" x ¾"	2.000	T3114MP100075PL	T3114MP100075PM
1½" x ½"	3.500	T3114MP150050PL	T3114MP150050PM
1½" x ¾"	3.000	T3114MP150075PL	T3114MP150075PM
1½" x 1"	3.000	T3114MP150100PL	T3114MP150100PM
2" x ½"	5.500	T3114MP200050PL	T3114MP200050PM
2" x ¾"	5.000	T3114MP200075PL	T3114MP200075PM
2" x 1"	5.000	T3114MP200100PL	T3114MP200100PM
2" x 1½"	3.000	T3114MP200150PL	T3114MP200150PM
2½" x ½"	7.500	T3114MP250050PL	T3114MP250050PM
2½" x ¾"	7.000	T3114MP250075PL	T3114MP250075PM
2½" x 1"	7.000	T3114MP250100PL	T3114MP250100PM
2½" x 1½"	5.000	T3114MP250150PL	T3114MP250150PM
2½" x 2"	3.000	T3114MP250200PL	T3114MP250200PM
3" x 1"	9.000	T3114MP300100PL	T3114MP300100PM
3" x 1½"	7.000	T3114MP300150PL	T3114MP300150PM
3" x 2"	5.000	T3114MP300200PL	T3114MP300200PM
3" x 2½"	3.000	T3114MP300250PL	T3114MP300250PM
4" x 1"	13.125	T3114MP400100PL	T3114MP400100PM
4" x 1½"	11.125	T3114MP400150PL	T3114MP400150PM
4" x 2"	9.125	T3114MP400200PL	T3114MP400200PM
4" x 2½"	7.125	T3114MP400250PL	T3114MP400250PM
4" x 3"	5.125	T3114MP400300PL	T3114MP400300PM
6" x 3"	7.625	T3114MP600300PL	T3114MP600300PM
6" x 4"	7.625	T3114MP600400PL	T3114MP600400PM



BPE Table #DT-21

## Weld x Weld Eccentric Reducers

Size	A	PL Finish - SF1	PM Finish - SF4
¾" x ½"	4.000	T32W-075050PL	T32W-075050PM
1" x ½"	4.500	T32W-100050PL	T32W-100050PM
1" x ¾"	4.000	T32W-100075PL	T32W-100075PM
1½" x ½"	5.500	T32W-150050PL	T32W-150050PM
1½" x ¾"	5.000	T32W-150075PL	T32W-150075PM
1½" x 1"	5.000	T32W-150100PL	T32W-150100PM
2" x ½"	7.750	T32W-200050PL	T32W-200050PM
2" x ¾"	7.250	T32W-200075PL	T32W-200075PM
2" x 1"	7.250	T32W-200100PL	T32W-200100PM
2" x 1½"	5.250	T32W-200150PL	T32W-200150PM
2½" x ½"	9.750	T32W-250050PL	T32W-250050PM
2½" x ¾"	9.250	T32W-250075PL	T32W-250075PM
2½" x 1"	9.250	T32W-250100PL	T32W-250100PM
2½" x 1½"	7.250	T32W-250150PL	T32W-250150PM
2½" x 2"	5.500	T32W-250200PL	T32W-250200PM
3" x 1"	11.250	T32W-300100PL	T32W-300100PM
3" x 1½"	9.250	T32W-300150PL	T32W-300150PM
3" x 2"	7.500	T32W-300200PL	T32W-300200PM
3" x 2½"	5.500	T32W-300250PL	T32W-300250PM
4" x 1"	15.500	T32W-400100PL	T32W-400100PM
4" x 1½"	13.500	T32W-400150PL	T32W-400150PM
4" x 2"	11.750	T32W-400200PL	T32W-400200PM
4" x 2½"	9.750	T32W-400250PL	T32W-400250PM
4" x 3"	7.750	T32W-400300PL	T32W-400300PM
6" x 3"	9.750	T32W-600300PL	T32W-600300PM
6" x 4"	10.000	T32W-600400PL	T32W-600400PM



BPE Table #DT-11

Note: Not all sizes and finishes are stocked

PL Finish – SF1

OD = 32R<sub>a</sub> Mechanically Polished

ID = 20R<sub>a</sub> Mechanically Polished

PM Finish – SF4

OD = 32R<sub>a</sub> Mechanically Polished

ID = 15R<sub>a</sub> Mechanically Polished and Electropolished

## Bradford™ High Purity BioPharm Line Clamp x Weld Eccentric Reducers



BPE Table #DT-26

Size	A	PL Finish - SF1	PM Finish - SF4
¾" x ½"	3.000	T32M-075050PL	T32M-075050PM
1" x ½"	3.500	T32M-100050PL	T32M-100050PM
1" x ¾"	3.000	T32M-100075PL	T32M-100075PM
1½" x ½"	4.500	T32M-150050PL	T32M-150050PM
1½" x ¾"	4.000	T32M-150075PL	T32M-150075PM
1½" x 1"	4.000	T32M-150100PL	T32M-150100PM
2" x ½"	6.500	T32M-200050PL	T32M-200050PM
2" x ¾"	6.000	T32M-200075PL	T32M-200075PM
2" x 1"	6.000	T32M-200100PL	T32M-200100PM
2" x 1½"	4.000	T32M-200150PL	T32M-200150PM
2½" x ½"	8.500	T32M-250050PL	T32M-250050PM
2½" x ¾"	8.000	T32M-250075PL	T32M-250075PM
2½" x 1"	8.000	T32M-250100PL	T32M-250100PM
2½" x 1 ½"	6.000	T32M-250150PL	T32M-250150PM
2½" x 2"	4.250	T32M-250200PL	T32M-250200PM
3" x 1"	10.000	T32M-300100PL	T32M-300100PM
3" x 1½"	8.000	T32M-300150PL	T32M-300150PM
3" x 2"	6.250	T32M-300200PL	T32M-300200PM
3" x 2½"	4.250	T32M-300250PL	T32M-300250PM
4" x 1"	14.125	T32M-400100PL	T32M-400100PM
4" x 1½"	12.125	T32M-400150PL	T32M-400150PM
4" x 2"	10.375	T32M-400200PL	T32M-400200PM
4" x 2½"	8.375	T32M-400250PL	T32M-400250PM
4" x 3"	6.375	T32M-400300PL	T32M-400300PM
6" x 3"	8.750	T32M-600300PL	T32M-600300PM
6" x 4"	9.000	T32M-600400PL	T32M-600400PM

## Clamp x Clamp Eccentric Reducers



BPE Table #DT-21

Size	A	PL Finish - SF1	PM Finish - SF4
¾" x ½"	2.000	T3214MP075050PL	T3214MP075050PM
1" x ½"	2.500	T3214MP100050PL	T3214MP100050PM
1" x ¾"	2.000	T3214MP100075PL	T3214MP100075PM
1½" x ½"	3.500	T3214MP150050PL	T3214MP150050PM
1½" x ¾"	3.000	T3214MP150075PL	T3214MP150075PM
1½" x 1"	3.000	T3214MP150100PL	T3214MP150100PM
2" x ½"	5.500	T3214MP200050PL	T3214MP200050PM
2" x ¾"	5.000	T3214MP200075PL	T3214MP200075PM
2" x 1"	5.000	T3214MP200100PL	T3214MP200100PM
2" x 1½"	3.000	T3214MP200150PL	T3214MP200150PM
2½" x ½"	7.500	T3214MP250050PL	T3214MP250050PM
2½" x ¾"	7.000	T3214MP250075PL	T3214MP250075PM
2½" x 1"	7.000	T3214MP250100PL	T3214MP250100PM
2½" x 1 ½"	5.000	T3214MP250150PL	T3214MP250150PM
2½" x 2"	3.000	T3214MP250200PL	T3214MP250200PM
3" x 1"	9.000	T3214MP300100PL	T3214MP300100PM
3" x 1½"	7.000	T3214MP300150PL	T3214MP300150PM
3" x 2"	5.000	T3214MP300200PL	T3214MP300200PM
3" x 2½"	3.000	T3214MP300250PL	T3214MP300250PM
4" x 1"	13.125	T3214MP400100PL	T3214MP400100PM
4" x 1½"	11.125	T3214MP400150PL	T3214MP400150PM
4" x 2"	9.125	T3214MP400200PL	T3214MP400200PM
4" x 2½"	7.125	T3214MP400250PL	T3214MP400250PM
4" x 3"	5.125	T3214MP400300PL	T3214MP400300PM
6" x 3"	7.500	T3214MP600300PL	T3214MP600300PM
6" x 4"	7.625	T3214MP600400PL	T3214MP600400PM

Note: Not all sizes and finishes are stocked

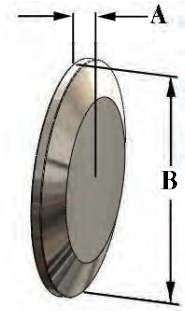
PL Finish – SF1  
OD = 32R<sub>a</sub> Mechanically Polished  
ID = 20R<sub>a</sub> Mechanically Polished

PM Finish – SF4  
OD = 32R<sub>a</sub> Mechanically Polished  
ID = 15R<sub>a</sub> Mechanically Polished and Electropolished

# Bradford™ High Purity BioPharm Line

## Solid End Caps

Size	A	B	PL Finish - SF1	PM Finish - SF4
1/2" - 3/4"	0.190	1.000	<i>T16AMP-050075PL</i>	<i>T16AMP-050075PM</i>
1" - 1 1/2"	0.250	1.990	<i>T16AMP-100150PL</i>	<i>T16AMP-100150PM</i>
2"	0.250	2.520	<i>T16AMP-200PL</i>	<i>T16AMP-200PM</i>
2 1/2"	0.250	3.050	<i>T16AMP-250PL</i>	<i>T16AMP-250PM</i>
3"	0.250	3.580	<i>T16AMP-300PL</i>	<i>T16AMP-300PM</i>
4"	0.310	4.690	<i>T16AMP-400PL</i>	<i>T16AMP-400PM</i>
6"	0.440	6.560	<i>T16AMP-600PL</i>	<i>T16AMP-600PM</i>



BPE Table #DT-31

## Auto Weld Ferrules

Size	A	PL Finish - SF1	PM Finish - SF4
1/2"	1.750	<i>TL14AM7-050PL</i>	<i>TL14AM7-050PM</i>
3/4"	1.750	<i>TL14AM7-075PL</i>	<i>TL14AM7-075PM</i>
1"	1.750	<i>TL14AM7-100PL</i>	<i>TL14AM7-100PM</i>
1 1/2"	1.750	<i>TL14AM7-150PL</i>	<i>TL14AM7-150PM</i>
2"	2.250	<i>TL14AM7-200PL</i>	<i>TL14AM7-200PM</i>
2 1/2"	2.250	<i>TL14AM7-250PL</i>	<i>TL14AM7-250PM</i>
3"	2.250	<i>TL14AM7-300PL</i>	<i>TL14AM7-300PM</i>
4"	2.250	<i>TL14AM7-400PL</i>	<i>TL14AM7-400PM</i>
6"	3.000	<i>TL14AM7-600PL</i>	<i>TL14AM7-600PM</i>



BPE Table #DT-22

## Weld Caps

Size	A	PL Finish - SF1	PM Finish - SF4
1/2"	1.500	<i>T16W-050PL</i>	<i>T16W-050PM</i>
3/4"	1.500	<i>T16W-075PL</i>	<i>T16W-075PM</i>
1"	1.500	<i>T16W-100PL</i>	<i>T16W-100PM</i>
1 1/2"	1.500	<i>T16W-150PL</i>	<i>T16W-150PM</i>
2"	1.500	<i>T16W-200PL</i>	<i>T16W-200PM</i>
2 1/2"	1.500	<i>T16W-250PL</i>	<i>T16W-250PM</i>
3"	1.500	<i>T16W-300PL</i>	<i>T16W-300PM</i>
4"	2.000	<i>T16W-400PL</i>	<i>T16W-400PM</i>
6"	2.500	<i>T16W-600PL</i>	<i>T16W-600PM</i>



BPE Table #DT-30

Note: Not all sizes and finishes are stocked

PL Finish – SF1

OD = 32R<sub>a</sub> Mechanically Polished

ID = 20R<sub>a</sub> Mechanically Polished

PM Finish – SF4

OD = 32R<sub>a</sub> Mechanically Polished

ID = 15R<sub>a</sub> Mechanically Polished and Electropolished

# Bradford™ High Purity BioPharm Line

## Clamp Adapter x Male NPT



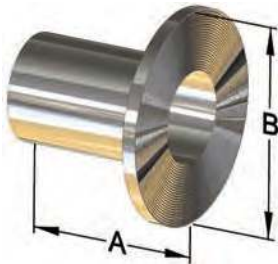
Size	A	PL Finish - SF1
1/2" x 1/4"	2.000	T21MP-050025PL
1/2" x 3/8"	2.000	T21MP-050375PL
1/2"	1.625	T21MP-050PL
1/2" x 3/4"	2.000	T21MP-050075PL
3/4" x 1/4"	2.000	T21MP-075025PL
3/4" x 3/8"	2.000	T21MP-075375PL
3/4" x 1/2"	2.000	T21MP-075050PL
3/4"	2.250	T21MP-075PL
1"	2.250	T21MP-100PL
1-1/2"	2.250	T21MP-150PL
2"	2.638	T21MP-200PL
2-1/2"	2.875	T21MP-250PL
3"	3.070	T21MP-300PL
4"	3.155	T21MP-400PL

## Clamp Adapter x Female NPT



Size	A	PL Finish - SF1
1/2" x 1/8"	1.250	T22MP-050125PL
1/2" x 1/4"	1.500	T22MP-050025PL
1/2" x 3/8"	1.500	T22MP-050375PL
1/2"	1.500	T22MP-050PL
1/2" x 3/4"	1.500	T22MP-050075PL
3/4" x 1/4"	1.500	T22MP-075025PL
3/4" x 3/8"	1.500	T22MP-075375PL
3/4" x 1/2"	1.625	T22MP-075050PL
3/4"	1.625	T22MP-075PL
1"	1.625	T22MP-100PL
1-1/2"	2.250	T22MP-150PL
2"	2.406	T22MP-200PL
2-1/2"	2.187	T22MP-250PL
3"	2.187	T22MP-300PL
4"	3.652	T22MP-400PL

## Stub Adapters



Size	A	B	PL Finish - SF1
1/2"	2.000	1.625	T14VB-050PL
3/4"	2.000	1.687	T14VB-075PL
1"	2.000	2.000	T14VB-100PL
1 1/2"	2.000	2.875	T14VB-150PL
2"	2.000	2.625	T14VB-200PL
2 1/2"	2.500	4.125	T14VB-250PL
3"	2.500	5.000	T14VB-300PL
4"	2.500	6.187	T14VB-400PL
6"	3.000	8.500	T14VB-600PL

# Bradford™ High Purity BioPharm Line

## BPE - Pharmaceutical Grade Tubing

Size	Wall Thickness	Carton Qty	PL Finish - SF1 <sup>1</sup>	PM Finish - SF4 <sup>2</sup>
1/2"	0.065	100'	<b>A270-050PL</b>	<b>A270-050PM</b>
3/4"	0.065	100'	<b>A270-075PL</b>	<b>A270-075PM</b>
1"	0.065	280'	<b>A270-100PL</b>	<b>A270-100PM</b>
1 1/2"	0.065	340'	<b>A270-150PL</b>	<b>A270-150PM</b>
2"	0.065	340'	<b>A270-200PL</b>	<b>A270-200PM</b>
2 1/2"	0.065	220'	<b>A270-250PL</b>	<b>A270-250PM</b>
3"	0.065	220'	<b>A270-300PL</b>	<b>A270-300PM</b>
4"	0.083	100'	<b>A270-400PL</b>	<b>A270-400PM</b>

<sup>1</sup> SF1 - 316L ASTM A270-S2 ASME BPE welded tube  
ID = 20R<sub>a</sub> mechanical polish OD = 32R<sub>a</sub> mechanical polish

<sup>2</sup> SF4 - 316L ASTM A270-S2 ASME BPE welded tube  
ID = 15R<sub>a</sub> electropolish OD = 32R<sub>a</sub> mechanical polish



### Operating Pressures

316L Stainless Steel Tube

Tube OD Size	Tube OD Size	Pressure (PSI)		
		<i>working</i>	<i>yield</i>	<i>burst</i>
1/2"	.065	3,250	6,500	19,500
3/4"	.065	2,167	4,330	13,000
1"	.065	2,280	3,300	9,100
1 1/2"	.065	1,520	2,200	6,100
2"	.065	1,140	1,600	4,600
2 1/2"	.065	910	1,300	3,600
3"	.065	760	1,100	3,000
4"	.083	730	1,000	2,900
6"	.109	635	900	2,540

The pressures shown in the table above are valid using Barlow's Formula and the following properties:

- material: 316L stainless steel
- yield strength (PSI): 25,000
- tensile strength (PSI): 70,000

Working Pressure = 1/4 of Burst Pressure, these valid from -20°F to 100°F.

All MTR's will be supplied by tubing manufacturer.

## Accessories Clamps

Service pressure ratings are based on the following parameters: matching elastomer gaskets and weld ferrules properly aligned and assembled with the clamps tightened to the required torques. Tests are done hydrostatically with no water hammer or shock loads. Please note the pressure ratings of the described unions are above the recommended pipe line operating pressures. SAFETY  
ALERT

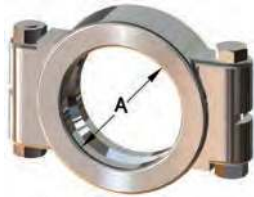
### Single Pin Heavy Duty Clamps with Cross Hole Wing Nut - 13MHHM



Tube OD	Service Pressure Rating @ 70°F *	Service Pressure Rating @ 250°F *	A	Part Number
1/2" - 3/4"	1500	1200	1.062	<b>13MHHM50-75</b>
1" - 1 1/2"	500	300	2.122	<b>13MHHM100-150</b>
2"	450	250	2.654	<b>13MHHM200</b>
2 1/2"	400	200	3.185	<b>13MHHM250</b>
3"	350	175	3.717	<b>13MHHM300</b>
4"	300	150	4.820	<b>13MHHM400</b>
6"	150	75	6.695	<b>13MHHM600</b>

\* wing nut tightened to 25 in. lb. of torque

### Bolted Clamps - 13MHP



Tube OD	Service Pressure Rating @ 70°F *	Service Pressure Rating @ 250°F *	A	Part Number
1/2" - 3/4"	1500	1200	1.062	<b>13MHP75 **</b>
1" - 1 1/2"	1500	1200	2.046	<b>13MHP100-150</b>
2"	1000	800	2.578	<b>13MHP200</b>
2 1/2"	1000	800	3.110	<b>13MHP250</b>
3"	1000	800	3.640	<b>13MHP300</b>
4"	800	600	4.744	<b>13MHP400</b>
6"	300	200	6.632	<b>13MHP600</b>

\* bronze nuts tightened to 20 ft. lb. of torque

\*\* nuts are brass

### Gaskets EPDM

- peroxide cured
- meets 21CFR 177.2600
- passed U.S.P. Class VI Cytotoxicity testing



Size	Part Number
1/2"	<b>42MP-E50</b>
3/4"	<b>42MP-E75</b>
1"	<b>40MP-E100</b>
1 1/2"	<b>40MP-E150</b>
2"	<b>40MP-E200</b>
2 1/2"	<b>40MP-E250</b>
3"	<b>40MP-E300</b>
4"	<b>40MP-E400</b>
6"	<b>40MP-E600</b>

### PTFE

- meets 21CFR 177.1550
- passed U.S.P. Class VI Cytotoxicity testing
- not recommended for use with bolted clamps



Size	Part Number
1/2"	<b>42MP-G50</b>
3/4"	<b>42MP-G75</b>
1"	<b>40MP-G100</b>
1 1/2"	<b>40MP-G150</b>
2"	<b>40MP-G200</b>
2 1/2"	<b>40MP-G250</b>
3"	<b>40MP-G300</b>
4"	<b>40MP-G400</b>
6"	<b>40MP-G600</b>

Note: other styles, sizes and materials are available, please contact Dixon Sanitary.



## Accessories

### Hex Hanger with Nitrile Grommets - B24RG

- Nitrile grommets maximum temperature: **230°F**
- All hex hangers can be equipped with the following coupler options:
  - 3/8 NPT
  - all thread: 3/8-16 or 1/2-13

Tube OD	A	B	Part Number
1/2" - 3/4"	3.425	1.450	<b>B24RG-G75</b>
1"	3.425	1.450	<b>B24RG-G100</b>
1 1/2"	4.000	2.125	<b>B24RG-G150</b>
2"	4.500	2.500	<b>B24RG-G200</b>
2 1/2"	4.950	3.125	<b>B24RG-G250</b>
3"	5.500	3.750	<b>B24RG-G300</b>
4"	6.950	4.750	<b>B24RG-G400</b>
6"	9.250	6.625	<b>B24RG-G600</b>



### Hex Hanger with ABS Sleeve - B24PS

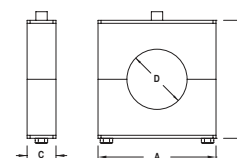
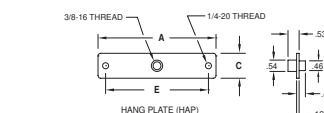
- ABS sleeve maximum temperature: **230°F**

Tube OD	A	B	304 Stainless Steel Part Number
1/2"	2.800	1.150	<b>B24PS-G50</b>
3/4"	2.800	1.150	<b>B24PS-G75</b>
1"	3.425	1.450	<b>B24PS-G100</b>
1 1/2"	4.000	2.125	<b>B24PS-G150</b>
2"	4.500	2.500	<b>B24PS-G200</b>
2 1/2"	4.950	3.125	<b>B24PS-G250</b>
3"	5.500	3.750	<b>B24PS-G300</b>
4"	6.950	4.750	<b>B24PS-G400</b>
6"	9.250	6.625	<b>B24PS-G600</b>



### Block Hanger with Hang Plate Design - B24\*\*HAP

Tube OD	A	B	C	D	E	Polypropylene Part Number	Santoprene Part Number
1/2"	1.84	1.70	1.19	0.50	1.33	<b>B24PPHAP-G50</b>	<b>B24SPHAP-G50</b>
3/4"	1.84	1.70	1.19	0.75	1.33	<b>B24PPHAP-G75</b>	<b>B24SPHAP-G75</b>
1"	3.33	2.85	1.19	1.00	2.55	<b>B24PPHAP-G100</b>	<b>B24SPHAP-G100</b>
1 1/2"	3.33	2.85	1.19	1.50	2.55	<b>B24PPHAP-G150</b>	<b>B24SPHAP-G150</b>
2"	3.33	2.85	1.19	2.00	2.55	<b>B24PPHAP-G200</b>	<b>B24SPHAP-G200</b>
2 1/2"	5.00	4.60	1.19	2.50	4.22	<b>B24PPHAP-G250</b>	<b>B24SPHAP-G250</b>
3"	5.00	4.60	1.19	3.00	4.22	<b>B24PPHAP-G300</b>	<b>B24SPHAP-G300</b>
4"	5.65	5.00	1.19	4.00	4.85	<b>B24PPHAP-G400</b>	<b>B24SPHAP-G400</b>

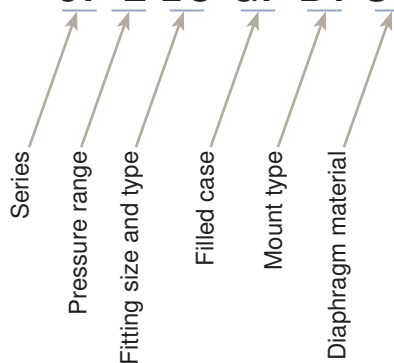


Note: other styles, sizes and materials are available, please contact Dixon Sanitary.

# Bradford™ Pharmaceutical Gauges

## Model Number Breakdown

**3P-E-2U-GF-BT-SS**



## Ordering Information

### Series:

- 2P**.....2½" pharmaceutical pressure gauge
- 3P**.....3½" pharmaceutical pressure gauge
- 5P**.....5" pharmaceutical pressure gauge

### Pressure Range: \*

- B** .....0 to 30 PSI (2 BAR)
- C** .....0 to 60 PSI (4 BAR)
- D** .....0 to 100 PSI (7 BAR)
- E** .....0 to 160 PSI (11 BAR)
- F** .....0 to 200 PSI (14 BAR)
- G** .....0 to 300 PSI (21 BAR)
- H** .....0 to 400 PSI (28 BAR)
- I** .....0 to 600 PSI (41 BAR)
- K** .....0 to 1,000 PSI (70 BAR)

\* Standard scales are in PSI only. For dual scales, add the letter B for PSI/BAR after the pressure range letter.

### Fitting Type: \*

- I**.....male I-Line
- J**.....female I-Line
- R**.....RJT
- S**.....#15 bevel seat sanitary male thread
- T**.....#13H captive nut and #14 bevel seat
- U**.....clamp
- DIN**.....DIN according to DIN 11851 (*specify DIN40 or DIN50*)
- SMS**.....SMS (*specify SMS38 or SMS51*)

\* specify size in inches: 1½, 2, 2½ or 3 then type, i.e. 1.5U

## Product Specifications

### Size range:

- 1½", 2", 2½" or 3"

### Material:

- 316L stainless steel

### Filled Case

- GF**..... glycerine filled

### Diaphragm Material

- SS**..... stainless steel

### Mount type

- BT**..... bottom
- RT**..... right side
- LF**..... left side
- TP**..... top
- BK**..... back

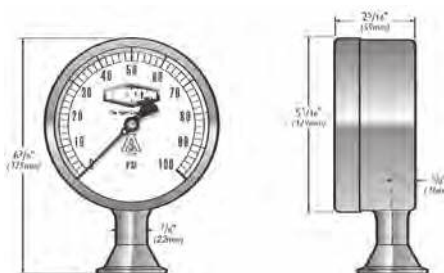
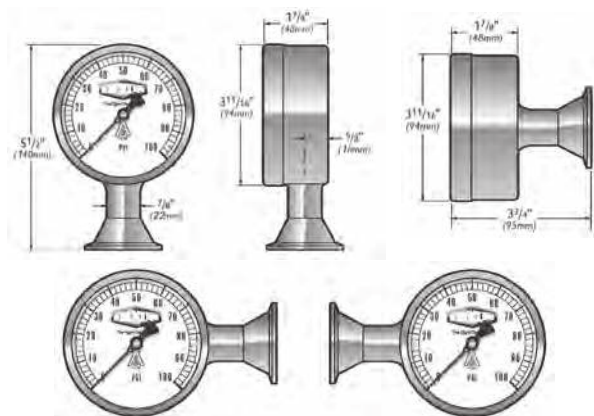
## Pharmaceutical Pressure Gauges



- accuracy: ± 0.75% of full scale
- over range capacity: 30%
- wetted surfaces: 316L stainless steel
- surface finishes (wetted parts): R<sub>a</sub> max = 8 microinches
- case material: 304 stainless steel
- dial size: 2½", 3½" or 5" diameter
- lens material: polycarbonate
- temperature limits: 0°F (-18°C) - 250°F (121°C)
- standard fill: food grade glycerin
- rezero feature: standard on pointer
- shipping weight: approximately 3 lbs. (1.3 kg)

### 3½" Gauge - (90 mm)

### 5" Gauge - (120 mm)



MTR's will be supplied by the gauge manufacturer.

**All fittings Comply with ASME BPE-2009 - Table DT-5-1  
Final Tolerances for  
Mechanically Polished Fittings and Process Components (inches)**

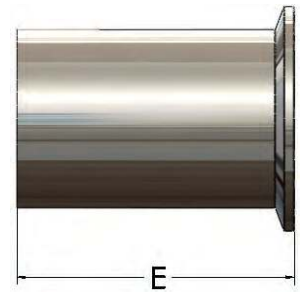
Nominal Size	OD	Wall Thickness	Squareness Face to Tangent (B)	Off Angle (O)	Tolerance on End-to-End (E) and Center-to-End (A)	Off Plane (P)
1/2"	±0.005	+0.005/-0.008	0.005	0.014	0.050	0.030
3/4"	±0.005	+0.005/-0.008	0.005	0.018	0.050	0.030
1"	±0.005	+0.005/-0.008	0.008	0.025	0.050	0.030
1 1/2"	±0.008	+0.005/-0.008	0.008	0.034	0.050	0.050
2"	±0.008	+0.005/-0.008	0.008	0.043	0.050	0.050
2 1/2"	±0.010	+0.005/-0.008	0.010	0.054	0.050	0.050
3"	±0.010	+0.005/-0.008	0.016	0.068	0.050	0.050
4"	±0.015	+0.008/-0.010	0.016	0.086	0.050	0.060



Squareness to Face



Off Angle



End-to-End



Off Plane



Off Angle



Center-to-End

# Technical Specifications

## Weld End chemical analysis (%) per ASME BPE 2009 Table DT-3

Element	C	Mn	P	S	Si	Cr	Ni	Mo
minimum	---	---	---	0.005	---	16.00	10.00	2.00
maximum	0.030	2.00	0.045	0.017	1.00	18.00	15.00	3.00

## BPE Surface Finish Requirements (SF-3)

Surface designation	Mechanically Polished ID and OD		Bradford™ High Purity code
	R <sub>a</sub> Maximum		
	ID μ-in.	OD μ-in	
SF0	no finish requirement	no finish requirement	
SF1	20	32	<b>PL</b>
SF2	25	32	
SF3	30	32	

Surface designation	Mechanically Polished OD and Electropolished ID		
	R <sub>a</sub> Maximum		
	ID μ-in.	OD μ-in	
SF4	15	32	<b>PM</b>
SF5	20	32	
SF6	25	32	

## Acceptance Criteria for Stainless Steel Mechanically Polished Product Contact Surface Finishes

Anomaly or Indication	Acceptance Criteria
Pits	If diameter <0.020" and bottom is shiny [Notes (2) and (4)]. Pits <0.003" Diameter is irrelevant and acceptable.
Cluster of pits	No more than 4 pits per each ½" x ½" inspection window. The cumulative total of all relevant pits shall not exceed 0.040".
Dents	None accepted [note (1)]
Finishing marks	If R <sub>a</sub> maximum is met
Welds	As welded shall meet requirements of MJ-6. If welds are finished, then shall be smooth and blended.
Nicks	None accepted
Scratches	For tubing, if cumulative length is <12.0" per 20' tube length or prorated and if depth is <0.003" For fittings, valves and other process components, if length is <0.25" cumulatively, depth <0.003" and R <sub>a</sub> max. is met. For vessels, if length <0.50" at 0.003 depth and if <3 per inspection window [Note (3)].
Surface cracks	None accepted
Surface inclusions	If R <sub>a</sub> max. is met
Surface residuals	None accepted, visual inspection
Surface roughness (R <sub>a</sub> )	See Table SF-3 (see above)
Weld slag	For tubing, up to 3 per 20' length or prorated, if <75% of the width of the weld bead. For fittings, valves, vessels and other process components, none accepted (as welded shall meet the requirements of MJ-6 and Table MJ-3).
Porosity	None open to the surface

Notes:

- For vessels, dents in the area covered by and resulting from welding dimple heat transfer jackets are acceptable.
- Black bottom pit of any depth is not acceptable.
- An inspection window is defined as an area 4" x 4"
- Pits in super-austenitic and nickel alloys may exceed this value. Acceptance criteria for pit size shall be established by agreement between owner/user and manufacturer. All other pit criteria remain the same.

# Packaging

## Product markings per ASME BPE 2009 DT-14.1

- Bradford™
- job number
- 316L
- Bradford™ part number
- heat number(s)
- surface finish code
- ASME BPE

Per the specification, the size of the fitting may limit the space available for markings. When that occurs, the markings starting at the bottom of the list are not applied. The Bradford™ part number will describe the part configuration and size.

MTR certifications are included inside the resealable bag with each fitting. The MTRs are traceable through the Job Number found on each fitting. All fittings are capped to prevent damage and contamination. For easy identification each finish will have a different color cap.

Finish *	Color Caps
PL/SF1	blue
PM/SF4	white

\* see page 20 for finish standards

# Bradford™ High Purity BioPharm Fittings

## 316L Stainless Steel Material Test Report

**Job Number** AA158

Bradford™ Part Number	Description	Size	Surface finish
T16W-200PL	BPE auto weld cap Table DT-30	2"	SF1

Chemical analysis (%) per ASME BPE 2009 Table DT-3

Item	Heat number	C	Mn	P	S	Si	Cr	Ni	Mo	
		0.030	2.00	0.045	0.017	1.00	16.00	10.00	2.00	min.
M	823310	0.014	1.40	0.034	0.012	0.44	16.30	10.10	2.07	max.
B	823707	0.014	1.49	0.033	0.010	0.38	16.20	10.10	2.08	

Mechanical Test Results

Item	Yield Strength (0.2%), MPa	Tensile Strength, MPa	Elongation, %	Hardness, HRB	Specification
	170 minimum	485 minimum	35 minimum	90 maximum	
M	378	624	46.1	88	ASTM A269
B	358	586	43.9	83	ASTM A269

Product of Thailand

We certify that the above is a true copy of the test results issued by the material supplier. This MTR conforms to EN10204-3.1. All fittings supplied by Dixon Sanitary conform to the requirements of the European Union Directive 2002/95/EC on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).























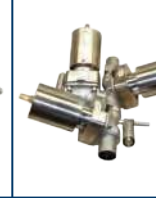












Bruce Anderson  
Technical Director

Dixon Sanitary  
N25 W23040 Paul Rd.  
Pewaukee, WI 53072  
USA  
800-789-1718  
bradfordfittings.com



# High Purity BioPharm Aseptic Diaphragm Valve

Our product offering of standard 2-way valves, innovative custom fabrications and modular block body designs solve the more demanding process problems.

Bio Series 1/4" - 1/2"	Fractional 1/2" - 3/4"	Sterile Access and L Pattern Fabrications	Standard 1" - 4"	Zero Static Tees and U Bends	Multi-Port Divert Valves	Multi-Cluster Valve Assemblies
						
						
						
						
						
						

**Features:**

- quick turn around
- 3D models
- application engineering service

**Applications:** pharmaceutical, bio-processing, cosmetics, food and beverage, fine chemicals and semi-conductor industries where aseptic and hygienic conditions are required.

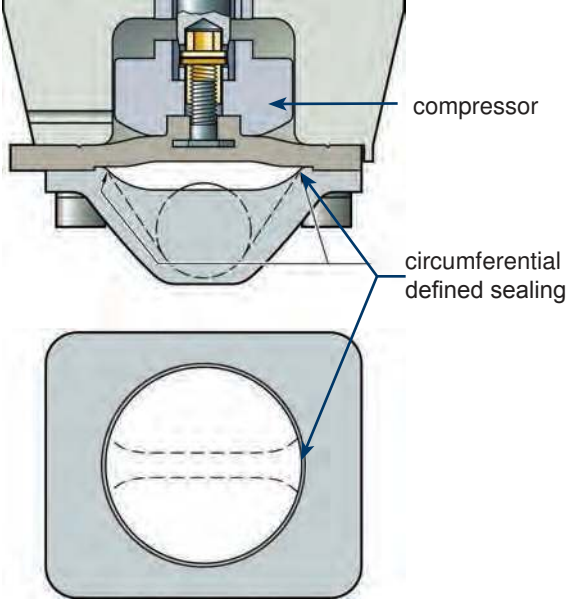
**Processes:** highly sterile media, ultra-pure water, WFI (Water for Injection), ultra-pure chemicals, intermediate and end products in the pharmaceutical and bio-processing industries.

**Features:** sterility, reduced contact surface and hold up volume, optimized drainability, elimination of cross contamination and customer-specific process designs.

# Innovative Design

Optimized internal cleaning because of Circumferential Defined Sealing Angle (CDSA-Design) between the process diaphragm and valve body.

- Product entrapment reduced or eliminated on the body bonnet flange.
- Better sealing performance and evenly distributed closing force.
- Diaphragm lifetime is extended.



## Bodies

- 316L – manufactured to ASME BPE Table DT-3
- full material traceability standard
- standard 316L bodies are forged or machined
- cast bodies are available when acceptable

## Bonnets

- manual and actuated
- three different styles
  - manual hand wheel
  - piston actuator
  - diaphragm actuator
- available in:
  - stainless steel
  - thermoplastic
  - combination of both



## Diaphragms

- EPDM
- Modified PTFE (TFM)/EPDM
- All diaphragms are FDA Compliant and conform to USP Class VI.



## Innovative Design

### L Pattern



Utilized in a vertical piping system to eliminate dead legs in point of use applications of high purity water systems or any other distribution systems.

See page 47 for more detailed information.

### Sterile Access



Utilized in a horizontal piping system where the main valve is oriented at the self-draining angle and the access port is at the lower drainable point of the water way.

---

## Multiport Advantages



- customer's specific design
- combination of many different nominal diameters
- optimized drainability
- minimized dead leg
- reduces surface contact, hold up volume and cross contamination of the product
- reduction of fittings, tubing and field welds in the system
- reduces qualification and validation documentation requirement
- all end connections and materials are available according to the customer's specification

Note: many different configurations are available, contact Dixon Sanitary.



# Specialty Valves and Process Solutions

## Tank Valves

- tank body valves machined from solid bar stock material
- other alloy options available as specified
- minimized dead leg and internal sump
- suitable for mounting with piston and diaphragm actuators
- optional manual operation via an extended crankshaft stem



See pages 49-51 for more detailed information.

## Sterile Sampling Unit

- suitable to take sterile samples from all liquids in aseptic processes
- sample can be taken with pneumatically controlled diaphragm valves or typically as a system with manual valves and a handle
- bring the complete unit in the laboratory for analyzing the sample in sterile conditions



## Purified Steam Sampling Unit

- high condensation performance
- time saving sampling
- compact design
- tube end or clamp end connection
- integrated sampling and control valve for cooling circuit
- easy installation due to standardized compact unit
- unit for mobile use



# Diaphragms

MA8



EPDM

PTFE/EPDM  
one-piece

Molded Open

MA10



EPDM

PTFE/EPDM  
one-piece

Molded Open

MA25-80



EPDM  
Molded Open

PTFE/EPDM  
two-piece  
Molded Closed

MA100



EPDM  
Molded Open

EPDM  
Molded Closed

## EPDM

Ethylene-propylene elastomer peroxide cured. The EPDM is a specifically developed compound reinforced with a vulcanized woven fabric inlay and is always manufactured in the molded open position. This diaphragm construction achieves higher stability for the diaphragm at elevated temperatures and pressures. In addition, the woven fabric inlay is vulcanized over the embedded compressor stud in order to strengthen the elastomer-metal connection. Thus, the EPDM diaphragm is ideal for vacuum applications.

## PTFE (TFM)

These PTFE diaphragms have been designed and offer the highest degree of chemical resistance, increased stability, longer flex life, less porosity, reduced cold flow and superior performance through temperature fluctuations between hot and cold and steam sterilization cycles.

### MA8 and MA10

The diaphragm dimensions MA8 and MA10 are designed as one-piece diaphragms: This means that the EPDM back is bonded with the PTFE.

The diaphragm is always manufactured in the molded open position. These one-piece diaphragms have less surface area and are subject to shorter linear strokes which explain the excellent performance that has proved itself over time.

MA8 diaphragm incorporates an elastomer button for assembly with the valve operating mechanism. The MA10 utilizes a threaded stud assembly with the valve operating mechanism. Both these features eliminate the potential for point loading at the center of the diaphragm.

### MA25 to MA100

The diaphragm dimensions MA25 to MA100 are designed as two-piece diaphragms consisting of a separate EPDM backing cushion and PTFE diaphragm. The diaphragm is always manufactured in the molded closed position. The advantage of this design for the MA25 to MA100 is that the diaphragm is in its molded shape while in the closed position of the valve. This reduces the force to close the valve and increases the life of the diaphragm.

In the two-piece diaphragms the threaded stud connection is embedded in the PTFE of the diaphragm. To eliminate the potential of point loading at the center of the diaphragm, a floating suspension connection to the valve operating mechanism is utilized.

Code		18	30	51	44
MA		8-100	8, 25, 40, 50	10	25-100
Material		EPDM	PTFE/EPDM	PTFE/EPDM	PTFE/EPDM
Design		One-piece Molded open	One-piece Molded open	Two-piece Molded closed	
Temperature Range	(°C)	-40 to 150 *	-20 to 150	-20 to 160	
	(°F)	-40 to 300 *	-20 to 300	-20 to 320	

\* The listed temperatures may apply to clean steam sterilization protocols and may not apply to continuous steam service. Upon request, other diaphragms are available with other materials, bigger sizes and for high temperatures up to 350°F (175°C).

# Clamp Dimensions and $C_v$ Factors

## Clamps

The clamp connection is the most popular connection for easy assembly and breakdown of process lines and valves. The clamp end connection is designed for a face-to-face joint that is leak proof and free of crevices.

The clamp end has a machined beveled seat and is used with specifically formed sealing gaskets made of EPDM or PTFE.

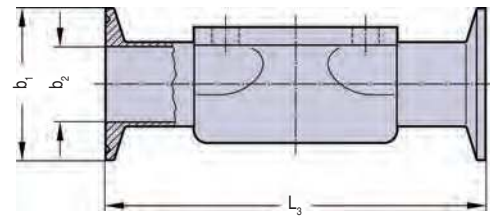
The gasket is inserted between the opposing clamp ends and is compressed tight with a wing nut quick disconnect clamp.

In general, the valve clamp ends are welded to the valve butt weld ends and polished according to the specified interior valve body surface finish.

The welded clamp ends are 100% visually inspected and compression tested. The clamp connections are available for all current pipe standard diameters.

If the connecting clamp ends are not identical and of the same diameter standard, there may result a reduction or step in the process piping system or the ability of self draining ends is not guaranteed.

If assembled correctly, the clamp end process system offers a smooth, crevice-free, self-aligning joint that reduces the hazards of contamination but minimizes turbulence and pressure drop through the system.



Valve Size	ASME BPE ASME BPE DT-V-1			
	$L_3$	$b_2$	$b_1$	
1/4"	2.5	0.18	0.992	Bio Series
3/8"	2.5	0.31	0.992	
1/2"	2.5	0.37	0.992	
3/8"	---	---	---	Standard Fractional
1/2"	3.5	0.37	0.992	
3/4"	4.0	0.62	0.992	
1/2"	4.0	0.37	0.992	Standard
3/4"	4.0	0.62	0.992	
1"	4.5	0.87	1.984	
1-1/4"	---	---	---	
1-1/2"	5.5	1.37	1.984	
2"	6.25	1.87	2.516	
2-1/2"	8.75 *	2.37	3.047	
3"	8.75	2.87	3.579	
4"	11.5	3.83	4.682	

\* length differing from standard; other lengths available on request

## $C_v$ Factor

In order to design valves for a process system correctly, the valve size is determined by the required flow rate. The  $C_v$  value is stated in the following table with regard to the nominal diameter. The  $C_v$  value is a parameter defining the flow rate in gallons per minute of water from 41-85°F which flows through the valve at a pressure loss of 1 PSI. This applies when the valve is 100% open.

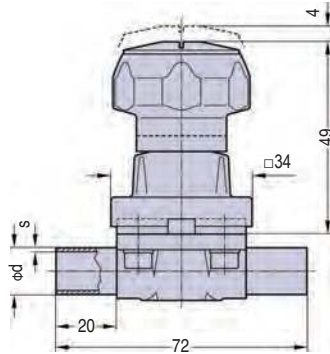
Valve Size	$C_v$ Value	Valve Type
1/4"	0.8	Bio Series
3/8"	1.6	
1/2"	2.3	
1/2"	2.6	Standard Fractional
3/4"	5.4	
1"	14.0	Standard
1-1/2"	46.8	
2"	56.2	
2-1/2"	99.5	
3"	128.7	
4"	216.5	

# DV02 / DV01

## Manual Valve DN 4-15 mm (1/4" - 1/2")



DV02



### Specific Features

Type DV02

- stainless steel bonnet and hand wheel
- autoclavable

Type DV01

- stainless steel bonnet and thermoplastic hand wheel
- autoclavable

### General Features

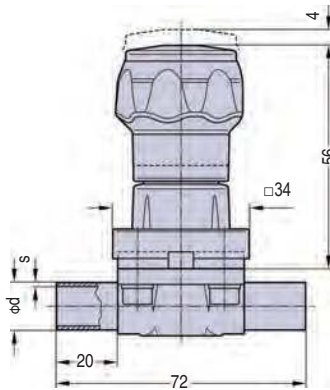
- rising hand wheel
- sealed bonnet with optical indicator
- adjustable internal travel stop
- circumferential, defined sealing angle between process diaphragm and valve body
- flexible diaphragm suspension

### Technical Data

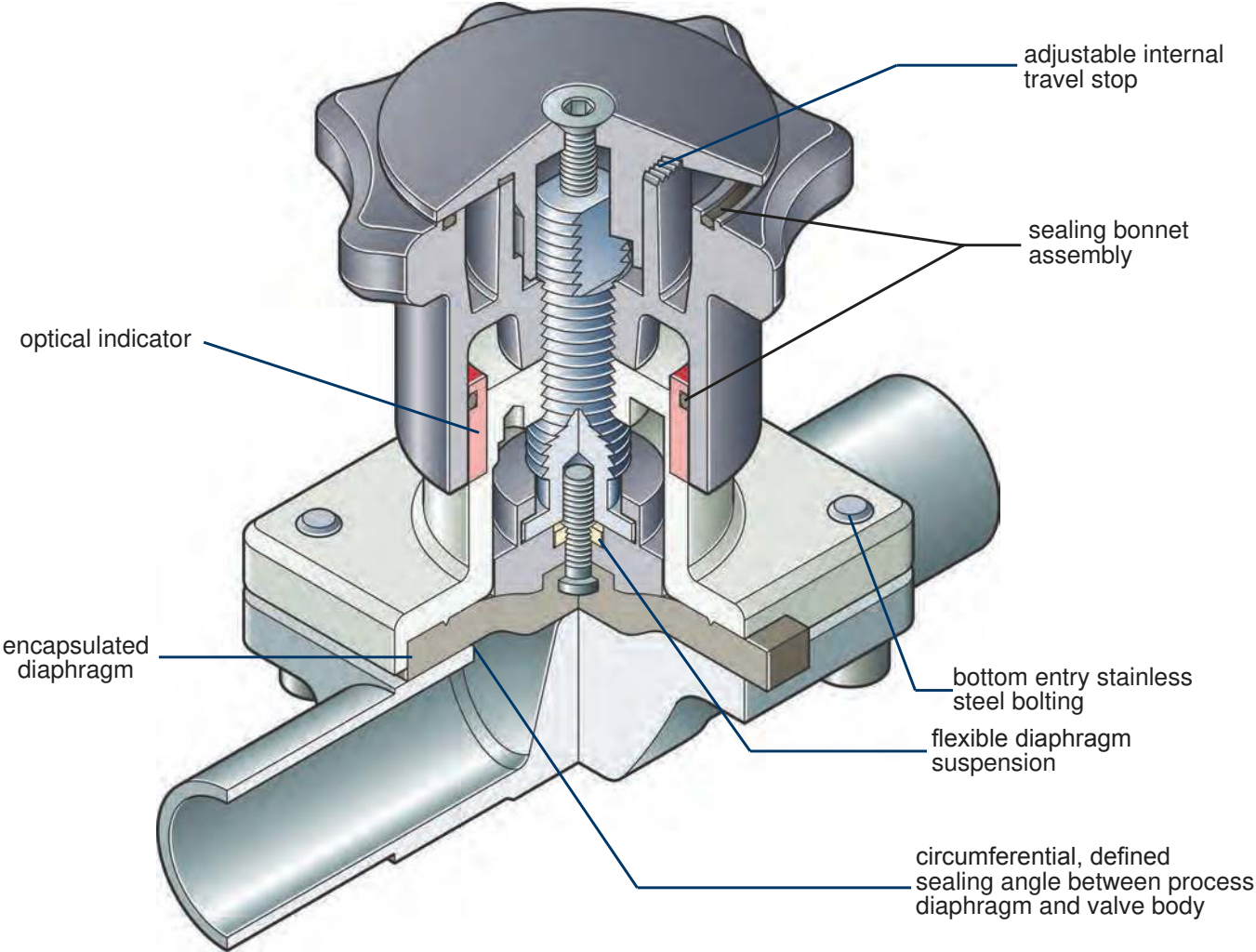
- control function: manually operated
- maximum working pressure: 145 PSI (10 BAR)
- maximum working temperature: 320°F (160°C) dependent on application
- diaphragm material: EPDM or PTFE
- body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- bonnets suitable for: two-way bodies, welded configurations, T-bodies, multiport bodies, tank bottom bodies
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA 8 for all body sizes



DV01



**DV05 / DV04 / DV03**  
**Manual Valve DN 8-20 mm (3/8" - 3/4")**

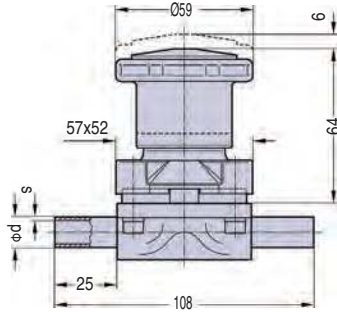


# DV05 / DV04 / DV03

## Manual Valve DN 8-20 mm (3/8" - 3/4")



DV03



### Specific Features

Type DV05

- stainless steel bonnet and hand wheel
- autoclavable

Type DV04

- stainless steel bonnet and thermoplastic hand wheel
- autoclavable

Type DV03

- thermoplastic bonnet and hand wheel

### General Features

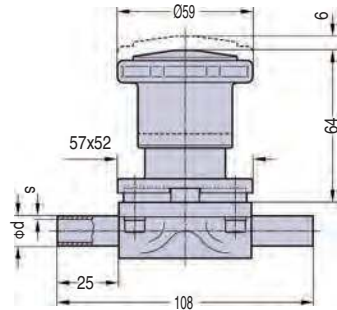
- rising hand wheel
- sealed bonnet with optical indicator
- adjustable internal travel stop
- circumferential, defined sealing angle between process diaphragm and valve body
- flexible diaphragm suspension
- encapsulated diaphragm

### Technical Data

- control function: manually operated
- maximum working pressure: 145 PSI (10 BAR)
- maximum working temperature: 320°F (160°C) dependent on application
- diaphragm material: EPDM or PTFE
- body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- bonnets suitable for: two-way bodies, welded configurations, T-bodies, multipoint bodies, tank bottom bodies
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA 10 for all body sizes

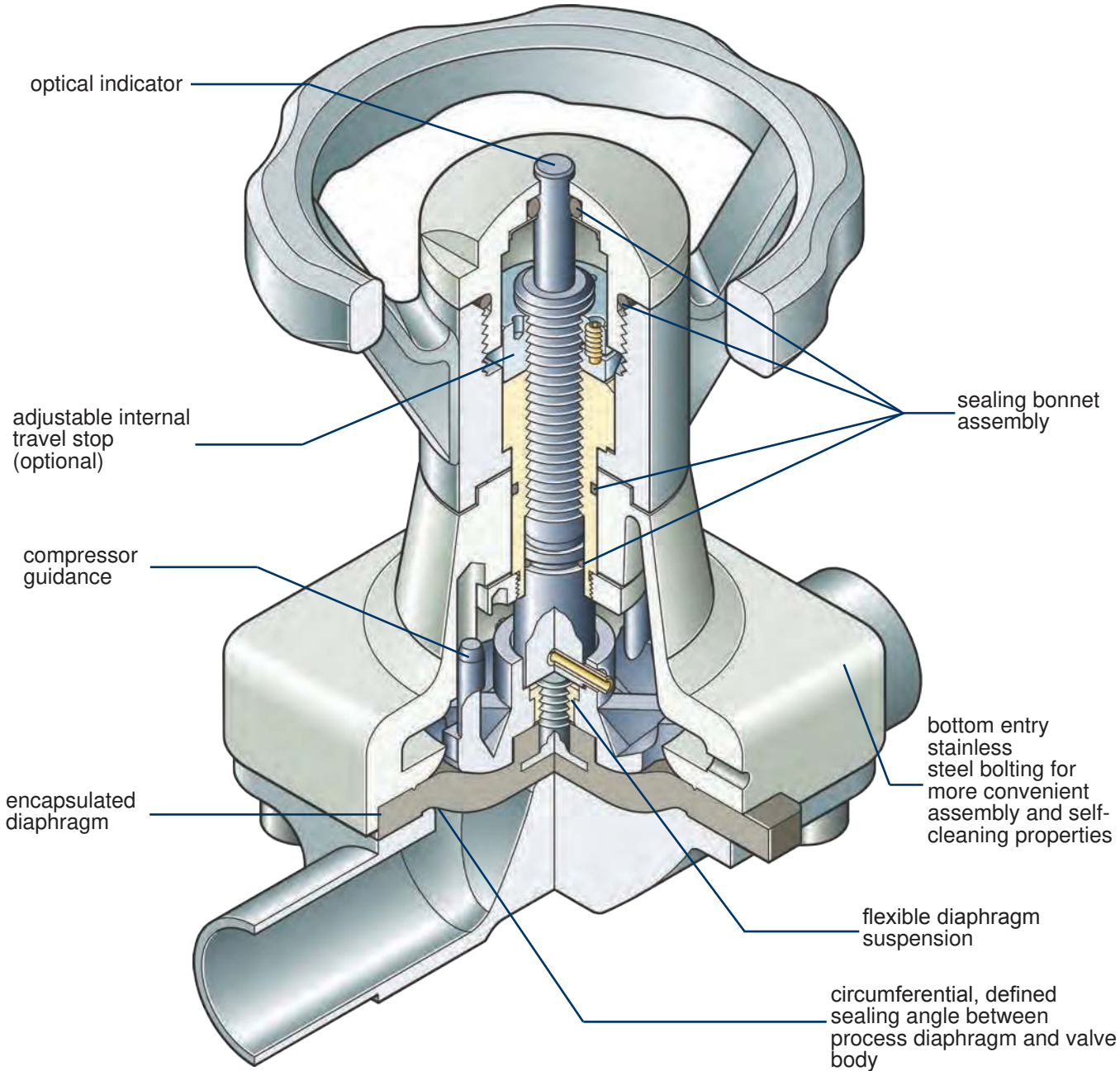


DV04 and DV05



# DV18

## Manual Valve DN 15-100 mm (1/2" - 4")



# DV18

## Manual Valve DN 15-100 mm (1/2" - 4")



DV18

### Features

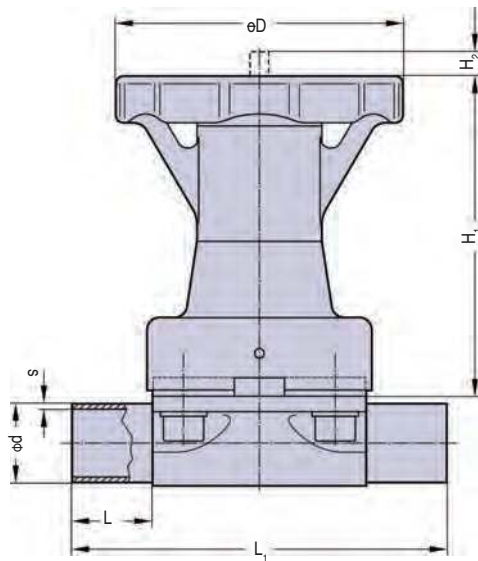
- stainless steel bonnet and hand wheel
- sealed bonnet
- autoclavable
- circumferential, defined sealing angle between process diaphragm and valve body
- flexible diaphragm suspension
- encapsulated diaphragm

### Optional

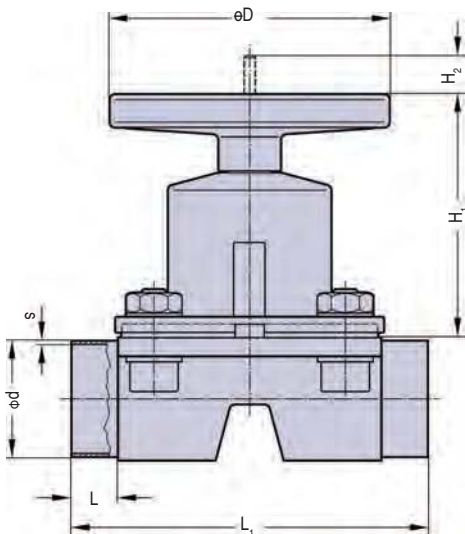
- adjustable internal travel stop or stroke limiter

### Technical Data

- control function: manually operated
- maximum working pressure: 145 PSI (10 BAR)  
DN 65-100 diaphragm PTFE 116 PSI (8 BAR)
- maximum working temperature: 320°F (175°C) dependent on application
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- bonnets suitable for: two-way bodies, welded configurations, T-bodies, multiport bodies, tank bottom bodies
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA see table



DN 15-50



DN 65-100 (drawing MA 80)

DN (mm)	Dimensions (mm)					
	MA	L	L <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>	D
15-25	25	25	120	103	10	92
32-40	40	25	153	135	17	135
50	50	30	173	135	24	135
65	80	30	216	180	38	198
80	80	30	254	180	38	198
100	100	30	305	220	50	252



# DV08

## Manual Valve DN 15-100 mm (1/2" - 4")

### Features

- stainless steel bonnet and thermoplastic hand wheel
- non rising hand wheel with optical indicator
- circumferential, defined sealing angle between process diaphragm and valve body up to DN 50
- flexible diaphragm suspension
- encapsulated diaphragm

### Optional

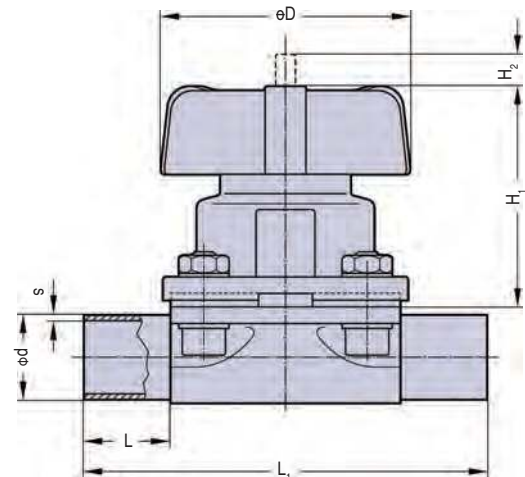
- adjustable travel stop or stroke limiter
- sealed bonnet
- autoclavable
- locking device

### Technical Data

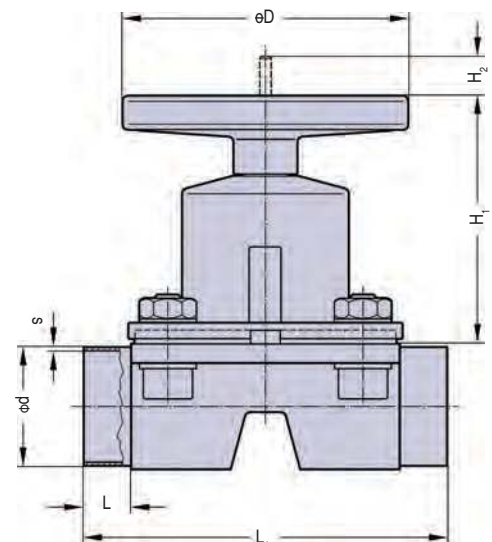
- control function: manually operated
- maximum working pressure: 145 PSI (10 BAR)  
DN 65-100 diaphragm PTFE 116 PSI (8 BAR)
- maximum working temperature: 320°F (175°C) dependent on application
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- bonnets suitable for: two-way bodies, welded configurations, T-bodies, multiport bodies, tank bottom bodies
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA see table



DV08



DN 15-50



DN 65-100 (drawing MA 80)

DN (mm)	Dimensions (mm)					
	MA	L	L <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>	D
15-25	25	25	120	71	10	90
32-40	40	25	153	91	14	114
50	50	30	173	110	23	140
65	80	30	216	180	38	198
80	80	30	254	180	38	198
100	100	30	305	220	50	252

# DV06

## Manual Valve DN 15-100 mm (1/2" - 4")



DV06

### Features

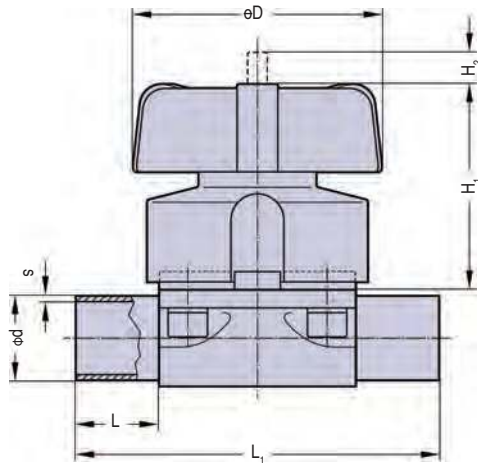
- thermoplastic bonnet and plastic hand wheel
- non rising hand wheel with optical indicator
- flexible diaphragm suspension
- encapsulated diaphragm

### Optional

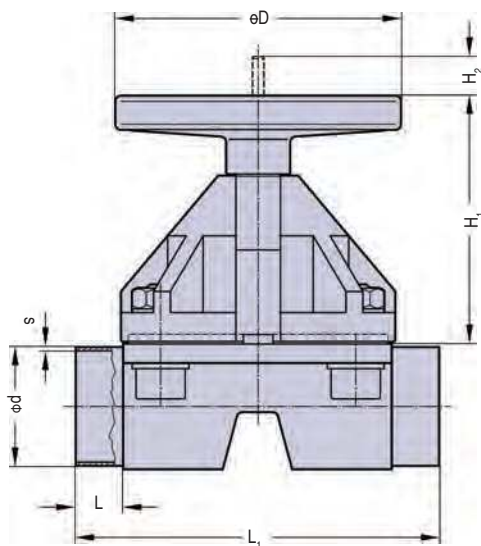
- adjustable travel stop or stroke limiter on top
- sealed bonnet
- locking device

### Technical Data

- control function: manually operated
- maximum working pressure: 145 PSI (10 BAR)  
DN 65-100 diaphragm PTFE 116 PSI (8 BAR)
- maximum working temperature: standard 176°F (80°C),  
HS-version DN ≤ 50 300°F (150°C) dependent on application
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE,  
investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27),  
special ends
- suitable for:  
bonnets up to DN 50: two-way bodies  
bonnets bigger DN 50: two-way bodies, welded  
configurations, T-bodies, multiport bodies, tank bottom bodies
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA see table



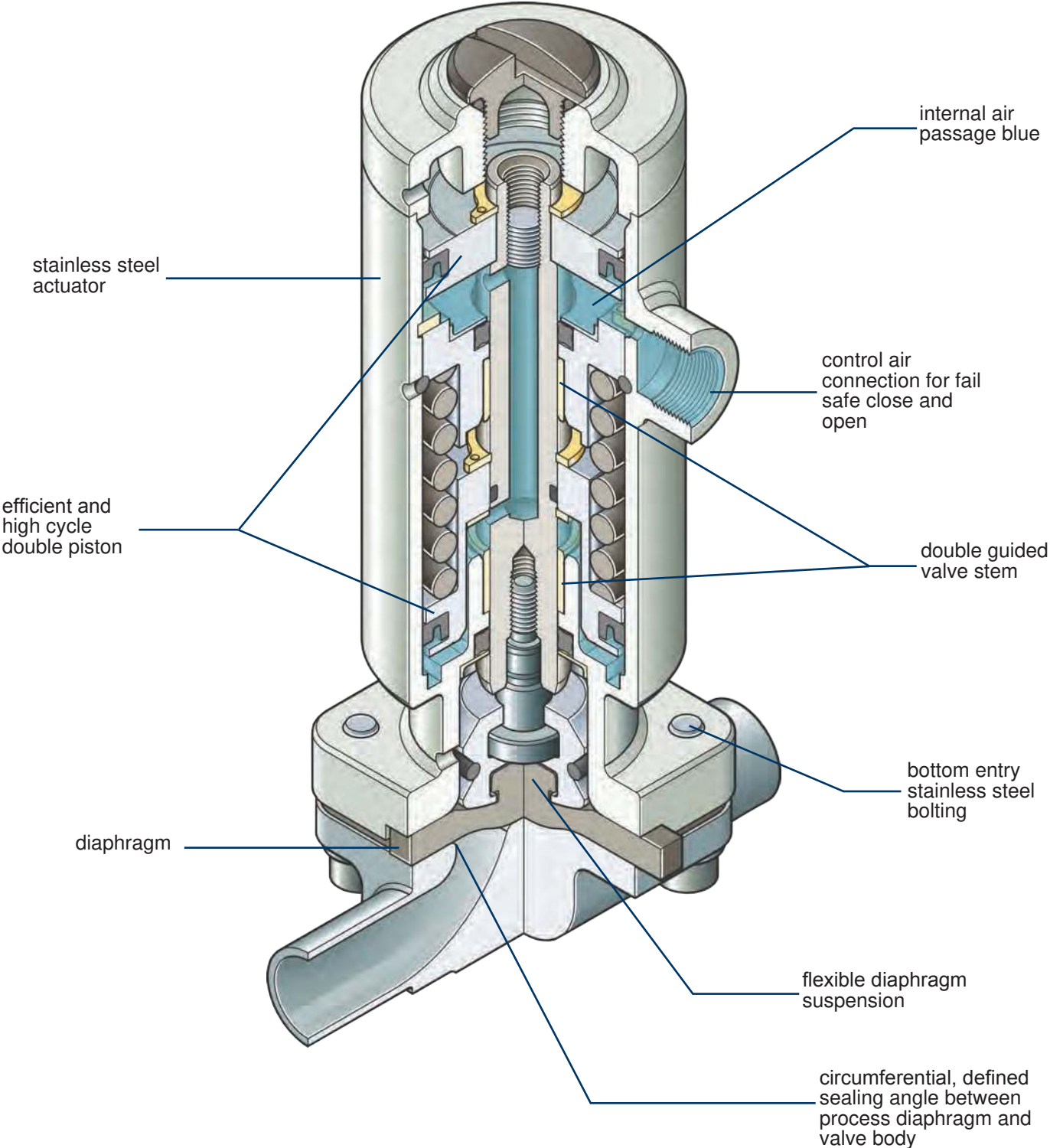
DN 15-50



DN 65-100 (drawing MA 80)

DN (mm)	Dimensions (mm)					
	MA	L	L <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>	D
15-25	25	25	120	71	10	90
32-40	40	25	153	91	14	114
50	50	30	173	110	23	140
65	80	30	216	180	38	198
80	80	30	254	180	38	198
100	100	30	305	220	50	252

# DV13 Pneumatically Operated Valve DN 4-15 mm (1/4" - 1/2")



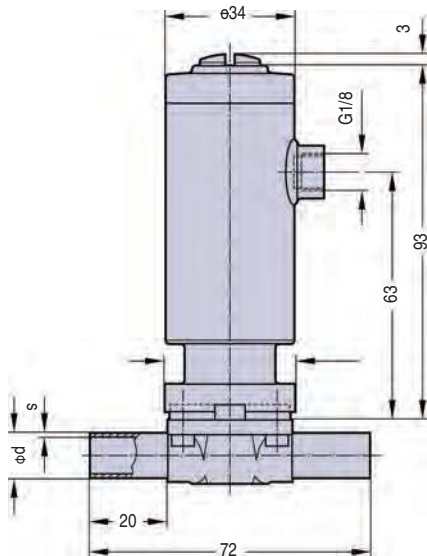
## DV13

# Pneumatically Operated Valve DN 4-15 mm (1/4" - 1/2")

This valve is available in a type DV13A and a type DV13J design. The type DV13A is available in the control function fail safe close and performs at a higher working pressure for standard application. The type DV13J in control function fail safe close is mainly designed for filling applications or all other instances where the working pressure is low. One advantage of this design is a longer diaphragm life due to less spring force. Other advantages include a very high cycle life and a smaller overall dimensional height. Type DV13J is also available in control functions fail safe open and double acting for standard working pressures.



DV13A



### Features

- high cycle double piston stainless steel actuator
- compact design, the outside diameter of the actuator is the same size as the bonnet flange connecting the diaphragm and body
- advantages in multiport bodies and manifold valve assemblies
- control air connection on the top, away from the process product line
- direction of control air connection is mountable in 90° rotations
- circumferential, defined sealing angle between process diaphragm and valve body
- flexible diaphragm suspension
- clean and polished exterior design ideal for sterile washdowns

### Optional

- available with a wide range of control equipment and accessories, see pages 52-53
- autoclavable

### Technical Data

- control function: pneumatically operated
  - DV13A: fail safe close (NC)
  - DV13J: fail safe close (NC)
  - fail safe open (NO)
  - double acting (DA)
- maximum working pressure: unidirectional (delta p=100%)
  - DV13A: fail safe close
    - EPDM diaphragm 116 PSI (8 BAR)
    - PTFE diaphragm 101 PSI, (7 BAR)
  - DV13J: fail safe close
    - EPDM diaphragm 65 PSI (4.5 BAR)
    - PTFE diaphragm 60 PSI (4 BAR)
  - fail safe open and double acting
    - EPDM diaphragm 116 PSI (8 BAR)
    - PTFE diaphragm 101 PSI (7 BAR)

Higher working pressures may be achieved with a different actuator.

- maximum working temperature: 320°F (160°C) dependent on application
- control pressure:
  - NC: DV13A: 60-101 PSI (4-7 BAR)
  - NC: DV13J: 80-101 PSI (5.5-7 BAR)
  - NO, DA: 80-101 PSI (5.5-7BAR)
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- actuators suitable for: two-way bodies, welded configurations, T-bodies, multiport bodies, tank bottom bodies
- flow rate: C<sub>v</sub> in GPM, see page 27
- diaphragm size: MA 8 all sizes

# DV20

## Pneumatically Operated Valve DN 4-15 mm (1/4" - 1/2")

### Features

- efficient thermoplastic piston actuator with stainless steel distance piece
- direction of control air connection is mountable in 90° rotations
- circumferential, defined sealing angle between process diaphragm and valve body
- flexible diaphragm suspension
- optical indicator

### Optional

- available with a wide range of control equipment and accessories, see pages 52 and 53

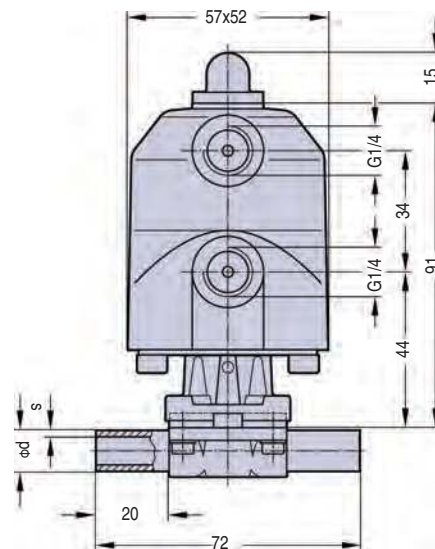
### Technical Data

- control function: pneumatically operated
  - fail safe close (NC)
  - fail safe open (NO)
  - double acting (DA)
- direction control connection:
  - 90° to flow direction, standard
- maximum working pressure: unidirectional (delta p=100%)
  - EPDM diaphragm 116 PSI (8 BAR)
  - PTFE diaphragm 101 PSI, (7 BAR)

Higher working pressures may be achieved with a different actuator.
- maximum working temperature: 320°F (160°C) dependent on application
- control pressure:
  - NC: 60-101 PSI (4-7 BAR)
  - NO, DA: 50-65 PSI (3.5-4.5 BAR)
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- actuators suitable for: two-way bodies, welded configurations, T-bodies, multiport bodies, tank bottom bodies
- flow rate: C<sub>v</sub> in GPM, see page 27
- diaphragm size: MA 8 all sizes



DV20



## DV23

# Pneumatically Operated Valve DN 8-20 mm (3/8"-3/4")



DV23

### Features

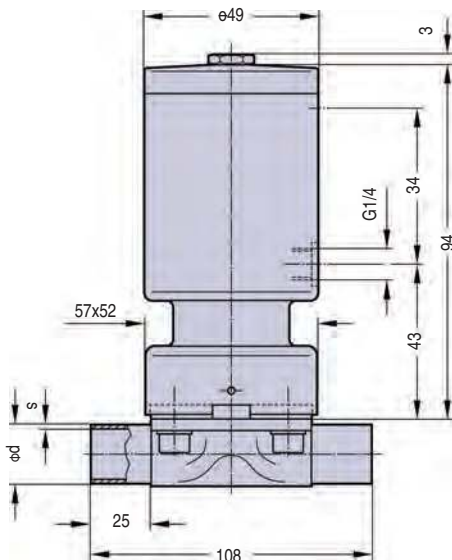
- high cycle piston stainless steel actuator
- compact design, the outside diameter of the actuator is the same size as the bonnet flange
- available in multiport bodies and manifold valve assemblies
- control air connection in flow direction
- circumferential, defined sealing angle between process diaphragm and valve body
- flexible diaphragm suspension
- encapsulated diaphragm
- clean and polished exterior design ideal for sterile washdowns

### Optional

- available with a wide range of control equipment and accessories, see pages 52 and 53, also for retrofitting
- control air connection 90° to flow direction
- autoclavable

### Technical Data

- control function: pneumatically operated
  - fail safe close (NC)
  - fail safe open (NO)
  - double acting (DA)
- direction control connection:
  - 90° in flow direction, standard
  - 90° to flow direction, optional
- maximum working pressure: unidirectional ( $\Delta p = 100\%$ ), EPDM diaphragm 116 PSI (8 BAR), PTFE diaphragm 101 PSI (7 BAR), a higher working pressure may be achieved with a different actuator
- maximum working temperature: 320°F (160°C), dependent on application
- control pressure: NC: 60-101 PSI (4-7 BAR), NO, DA: 60-72 PSI (4-5 BAR)
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- actuators suitable for: two-way bodies, welded configurations, T-bodies, multiport bodies, tank bottom bodies
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA 10 all sizes



# DV12 (3/8" - 3/4") Pneumatically Operated Valve DN 8-20mm

## Features

- efficient thermoplastic piston actuator with stainless steel distance piece
- control air connection 90° to flow direction
- flexible diaphragm suspension
- encapsulated diaphragm
- optical indicator
- compact design, the outside diameter of the actuator is the same size as the bonnet flange

## Optional

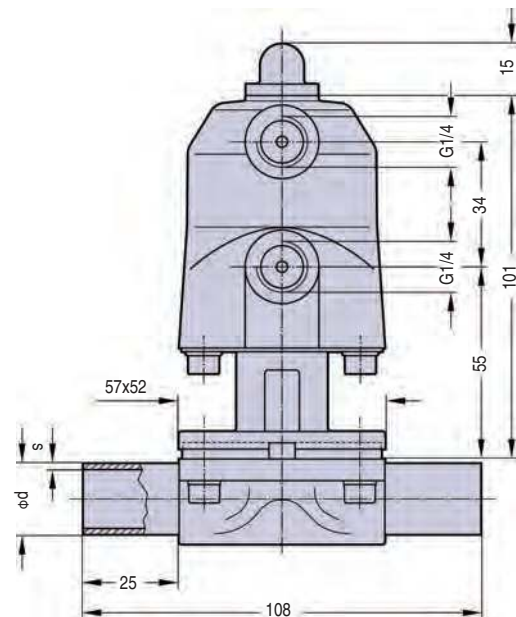
- available with a wide range of control equipment and accessories, see pages 52 and 53, also for retrofitting
- control air connection in flow direction

## Technical Data

- control function: pneumatically operated
  - fail safe close (NC)
  - fail safe open (NO)
  - double acting (DA)
- direction control connection:
  - 90° to flow direction, standard
- maximum working pressure: unidirectional ( $\Delta p = 100\%$ ), EPDM diaphragm 116 PSI (8 BAR), PTFE diaphragm 101 PSI (7 BAR), a higher working pressure may be achieved with a different actuator
- maximum working temperature: 320°F (160°C), dependent on application
- control pressure: NC:, 60-101 PSI (4-7 BAR), NO, DA: 60-72 PSI (4-5 BAR)
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- actuators suitable for: two-way bodies, welded configurations, T-bodies, multi port bodies, tank bottom bodies
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA 10 all sizes



DV12

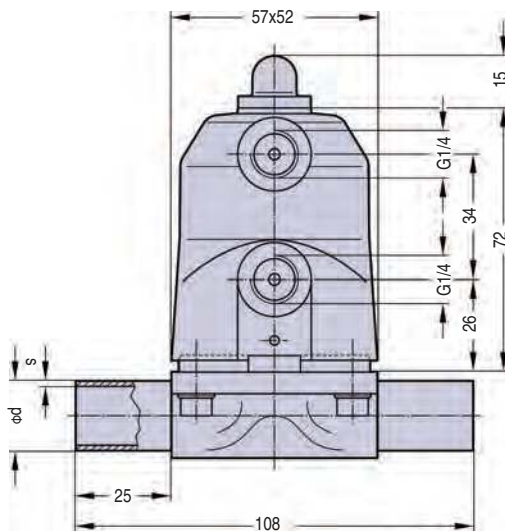


# DV14

## Pneumatically Operated Valve DN 8-20 mm (3/8"-3/4")



DV14



### Features

- efficient thermoplastic piston actuator direct assembled with the valve body
- control air connection 90° to flow direction for side by side or other installations saving space
- compact design, the outside diameter of the actuator is the same size as the bonnet flange
- actuator high resistance to heat transfer
- smooth exterior design ideal for washdowns
- encapsulated diaphragm
- optical indicator

### Optional

- available with a wide range of control equipment and accessories, see pages 52 and 53, also for retrofitting
- control air connection in flow direction

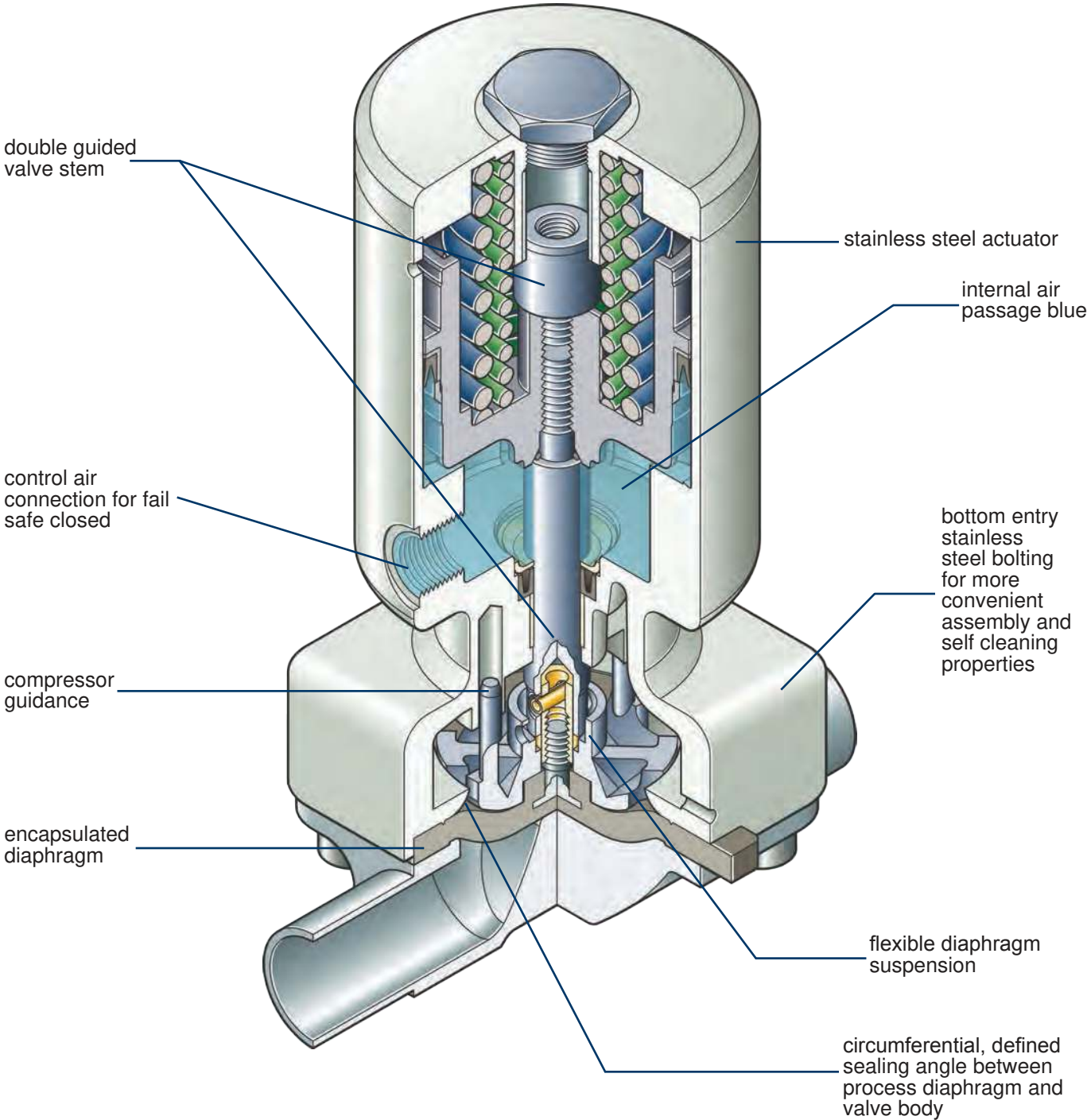
### Technical Data

- control function: pneumatically operated
  - fail safe close (NC)
  - fail safe open (NO)
  - double acting (DA)
- direction control connection:
  - 90° to flow direction, standard
- maximum working pressure: unidirectional ( $\Delta p = 100\%$ ), EPDM diaphragm 116 PSI (8 BAR), PTFE diaphragm 101 PSI (7 BAR), a higher working pressure may be achieved with a different actuator
- maximum working temperature: 176°F (80°C) standard, 300°F (150°C) HS-version, dependent on application
- control pressure: NC: 60-101 PSI (4-7 BAR), NO, DA: 60-72 PSI (4-5 BAR)
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- actuators suitable for: two-way bodies, welded configurations
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA 10 all sizes



# DV21

## Pneumatically Operated Valve DN 15-100 mm (1/2"-4")

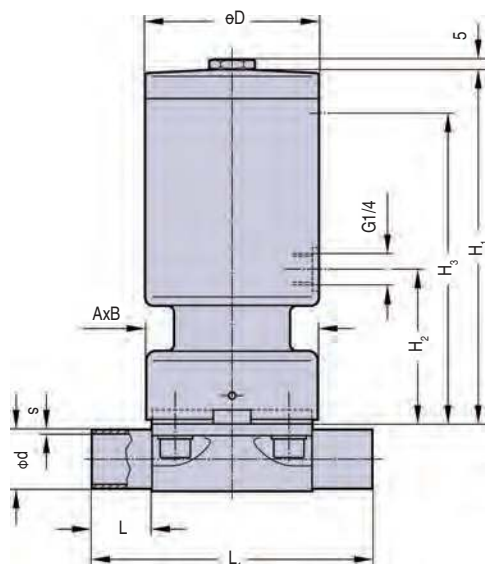


# DV21

## Pneumatically Operated Valve DN 15-100 mm (1/2"-4")



DV21



### Features

- high cycle piston stainless steel actuator
- compact design, the outside diameter of the actuator is the same size as the bonnet flange
- available in multiport bodies and manifold valve assemblies
- control air connection in flow direction
- circumferential, defined sealing angle between process diaphragm and valve body
- flexible diaphragm suspension
- encapsulated diaphragm
- clean and polished exterior design ideal for sterile washdowns

### Optional

- available with a wide range of control equipment and accessories, see pages 52 and 53, also for retrofitting
- control air connection 90° to flow direction
- autoclavable

### Technical Data

- control function: pneumatically operated
  - fail safe close (NC)
  - fail safe open (NO)
  - double acting (DA)
- direction control connection:
  - in flow direction, standard
  - 90° to flow direction, optional
- maximum working pressure: unidirectional ( $\Delta p = 100\%$ ), a higher working pressure may be achieved with a different actuator

Diaphragm	DN 15-50 (2")	DN 65-80 (2.5"-3")	DN100 (4")
EPDM	145 PSI (10 BAR)	101 PSI (7 BAR)	87 PSI (6 BAR)
PTFE	116 PSI (8 BAR)	87 PSI (6 BAR)	72 PSI (5 BAR)

- maximum working temperature: 350°F (175°C), dependent on application
- control pressure:
  - NC: DN 15-80, 72-116 PSI (5-8 BAR)
  - NC: DN100, 87-116 PSI (6-8 BAR)
  - NO, DA DN 15-80, 65-87 PSI (4.5-6 BAR)
  - NO, DA DN 100, 80-101 PSI (5.5-7 BAR)
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- actuators suitable for: two-way bodies, welded configurations, T-bodies, multiport bodies and tank bottom bodies
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA see table below

DN (mm)	Dimensions (mm)							
	MA	L	L <sub>1</sub>	A x B	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	D
15-25	25	25	120	73x79	146	66	133	75
32-40	40	25	153	96x105	180	75	160	105
50	50	30	173	111x130	216	77	180	105
65	80	30	216	190x170	309	135	285	175
80	80	30	254	190x170	309	135	285	175
100	100	30	305	Φ238	318	143	295	175

# DV12 (1/2" - 4") Pneumatically Operated Valve DN 15-100 mm

## Features

- thermoplastic diaphragm actuator with stainless steel distance piece
- control air connection 90° to flow direction
- flexible diaphragm suspension
- encapsulated diaphragm

## Optional

- available with a wide range of control equipment and accessories, see pages 52 and 53, also for retrofitting

## Technical Data

- control function: pneumatically operated  
fail safe close (NC)  
fail safe open (NO)  
double acting (DA)
- direction control connection:  
90° to flow direction, standard
- maximum working pressure: unidirectional ( $\Delta p = 100\%$ ),  
a higher working pressure may be achieved with a different actuator

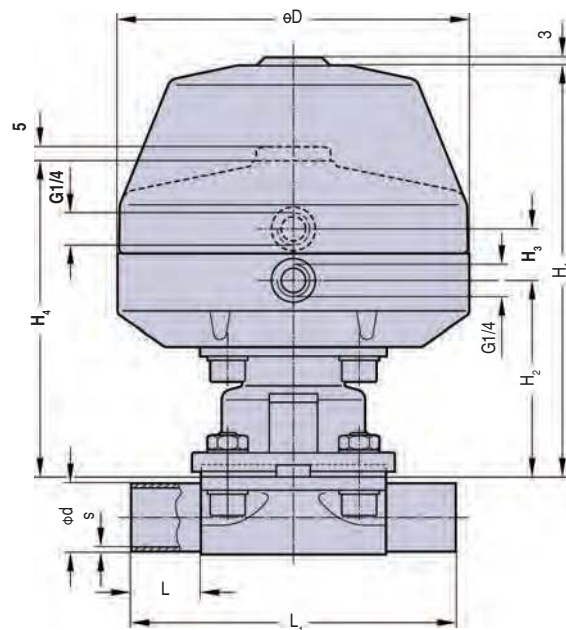
Diaphragm	DN 15-50 (2")	DN 65-80 (2.5", 3")	DN100 (4")
EPDM	145 PSI (10 BAR)	101 PSI (7 BAR)	87 PSI (6 BAR)
PTFE	116 PSI (8 BAR)	87 PSI (6 BAR)	72 PSI (5 BAR)

- maximum working temperature: 350°F (175°C), dependent on application
- control pressure:
  - NC: DN 15-50, 65-87 PSI (4.5-6 BAR)
  - NC: DN 65-80, 65-101 PSI (4.5-7 BAR)
  - NC: DN 100, 80-101 PSI (5.5-7 BAR)
  - NO, DA DN 15-80, 60-80 PSI (4-5.5 BAR)
  - NO, DA DN 100, 72-93 PSI (5-6.5 BAR)
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- actuators suitable for: two-way bodies, welded configurations, T bodies, multi port bodies, tank bottom bodies
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA see table below

DN (mm)	Dimensions (mm)							
	MA	L	L <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	D
15-25	25	25	120	148	71	31	120	130
32-40	40	25	153	194	95	31	144	161
50	50	30	173	233	109	31	177	217
65	80	30	216	314	166	41	275	265
80	80	30	254	314	166	41	275	265
100	100	30	305	314	166	41	284	265



DV12



# DV15

## Pneumatically Operated Valve DN 15-100 mm (1/2"-3")

### Features

- thermoplastic diaphragm actuator direct assembled with the valve body
- actuator high resistance to heat transfer
- smooth exterior design ideal for washdowns
- control air connection 90° to flow direction
- flexible diaphragm suspension
- encapsulated diaphragm

### Optional

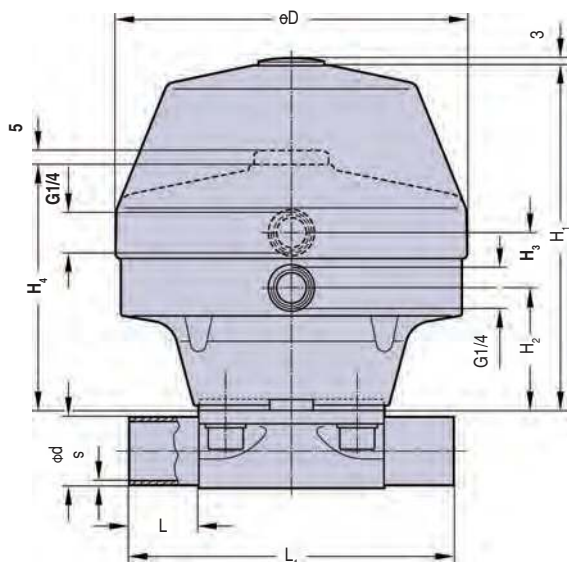
- available with a wide range of control equipment and accessories, see pages 52 and 53, also for retrofitting

### Technical Data

- control function: pneumatically operated  
fail safe close (NC)  
fail safe open (NO)  
double acting (DA)
- direction control connection:  
90° to flow direction, standard
- maximum working pressure: unidirectional ( $\Delta p = 100\%$ ),  
a higher working pressure may be achieved with a different actuator



DV15



Diaphragm	DN 15-50 (2")	DN 65-80 (2.5"-3")
EPDM	145 PSI (10 BAR)	101 PSI (7 BAR)
PTFE	116 PSI (8 BAR)	87 PSI (6 BAR)

- maximum working temperature: 176°F (80°C)
- control pressure:
  - NC DN 15-50, 65-87 PSI (4.5-6 BAR)
  - NC DN 65-80, 65-101 PSI (4.5-7 BAR)
  - NO, DA DN 15-80, 60-80 PSI (4-5.5 BAR)
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- actuators suitable for: two-way bodies, welded configurations
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA see table below

DN (mm)	Dimensions (mm)							
	MA	L	L <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	D
15-25	25	25	120	153	49	31	97	130
32-40	40	25	153	176	77	31	131	161
50	50	30	173	214	91	31	161	217
65	80	30	216	269	121	41	229	265
80	80	30	216	269	121	41	229	265

# DV16

## Pneumatically Operated Valve DN 15-50 mm (1/2"-2")

### Features

- thermoplastic piston actuator
- compact design
- actuator high resistance to heat transfer
- control air connection in flow direction
- circumferential, defined sealing angle between process diaphragm and valve body
- flexible diaphragm suspension
- encapsulated diaphragm
- smooth exterior design ideal for washdowns

### Optional

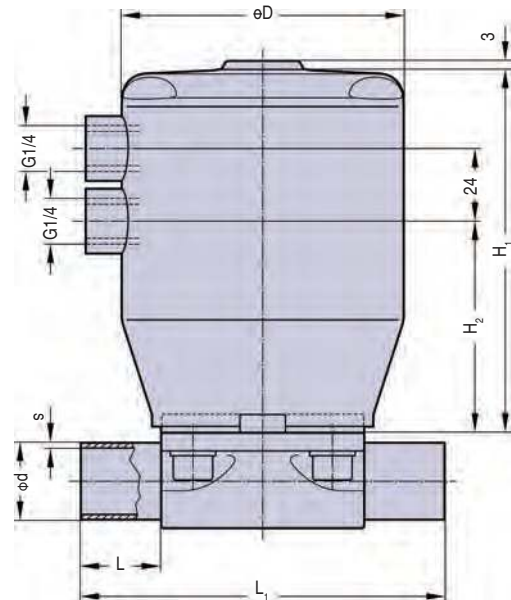
- available with a wide range of control equipment and accessories, see pages 52 and 53, also for retrofitting
- control air connection 90° to flow direction

### Technical Data

- control function: pneumatically operated
  - fail safe close (NC)
  - fail safe open (NO)
  - double acting (DA)
- direction control connection:
  - in flow direction, standard
  - 90° to flow direction, optional
- maximum working pressure: unidirectional ( $\Delta p = 100\%$ ), EPDM diaphragm, 145 PSI (10 BAR), PTFE diaphragm, 116 PSI (8 BAR), a higher working pressure may be achieved with a different actuator.
- maximum working temperature: HS-version 300°F (150°C), dependent on application
- control pressure:
  - NC 65-101 PSI (4.5-7 BAR)
  - NO, DA 60-72 PSI (4-5 BAR)
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- actuators suitable for: two-way bodies, welded configurations
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA see table below



DV16



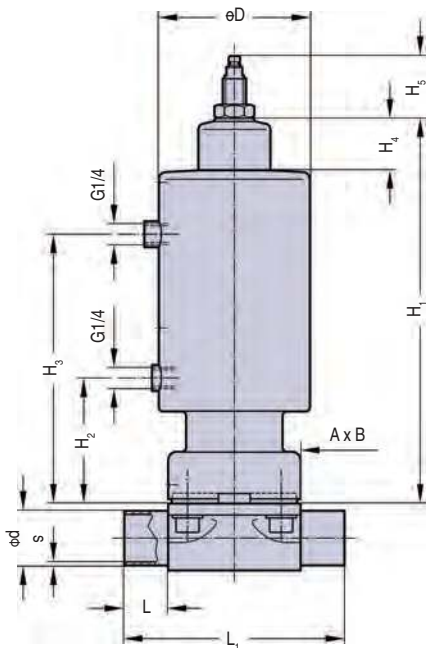
DN (mm)	Dimensions (mm)					
	MA	L	L <sub>1</sub>	H <sub>1</sub>	H <sub>2</sub>	D
15-25	25	25	120	120	70	92
32-40	40	25	153	133	75	112
50	50	30	173	173	111	143

## DV24

# Pneumatically Operated Valve DN 15-50 mm (1/2"-2")



DV24



### Features

- two stage stainless steel actuator
- second position adjustable with reduced flow for filling
- compact design, the outside diameter of the actuator is the same size as the bonnet flange
- available in multi port bodies and manifold valve assemblies
- control air connection in flow direction
- circumferential, defined sealing angle between process diaphragm and valve body
- flexible diaphragm suspension
- encapsulated diaphragm
- clean and polished exterior design ideal for sterile washdowns
- optical indicator

### Optional

- available with a wide range of control equipment and accessories, see pages 52 and 53, also for retrofitting
- control air connection 90° to flow direction
- autoclavable

### Technical Data

- control function: pneumatically operated  
fail safe close (NC)
- direction control connection:  
in flow direction, standard  
90° to flow direction, optional
- maximum working pressure: unidirectional ( $\Delta p = 100\%$ ), EPDM diaphragm, 145 PSI (10 BAR), PTFE diaphragm, 116 PSI (8 BAR), a higher working pressure may be achieved with a different actuator.
- maximum working temperature: 320°F (160°C), dependent on application
- control pressure:  
NC: 72-116 PSI (5-8 BAR)
- diaphragm material: EPDM or PTFE
- valve body material: forged 1.4435/316L ASME/BPE, investment cast 1.4435/316L, other alloys
- end connection: butt weld ends, clamps (see page 27), special ends
- actuators suitable for: two-way bodies, welded configurations, T-bodies, multiport bodies, tank bottom bodies
- flow rate:  $C_v$  in GPM, see page 27
- diaphragm size: MA see table below

DN (mm)	Dimensions (mm)									
	MA	L	L <sub>1</sub>	A x B	H <sub>1</sub>	H <sub>2</sub>	H <sub>3</sub>	H <sub>4</sub>	H <sub>5</sub>	D
15-25	25	25	120	73 x 79	220	66	150	-	35	75
32-40	40	25	153	96 x 105	250	75	185	28	40	105
50	50	30	173	110 x 130	294	77	221	28	47	105

# Welded Valve Configurations

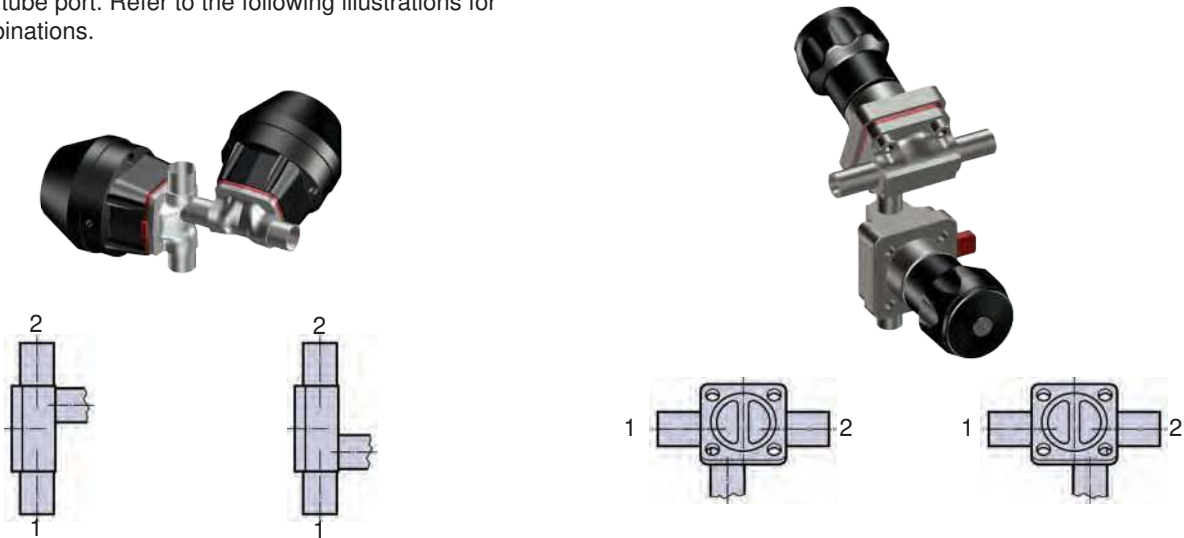
The main valve orientation distinguishes between the two different principles:

### SL or GMP

The SL Fabrication is utilized in a vertical piping system to eliminate dead legs in point of use applications of high purity water systems or any other distribution systems. This valve design serves as a 90° elbow for the piping system or as a valve by valve configuration. In a valve by valve configuration the horizontal valve is orientated at the self-draining angle. When the vertical main valve is opened it provides a sample untainted by bacterial growth or process contamination. Available in sizes up to DN 100 (4") for both the main valve and the L valve or tube port. Refer to the following illustrations for possible combinations.

### SA or SAP

The Sterile Access Fabrication is utilized in a horizontal piping system where the main valve is orientated at the self-draining angle and the access port is at the lowest drainable point of the waterway. The sterile access may be used for applications including sampling, steam, condensate or as a divert port. The Sterile Access Fabrication is available with either a tube port or a vertical or horizontal valve port. Available in sizes up to DN 100 (4") for both the main valve and access valve or tube port. Refer to the following illustrations for possible combinations.



#### SL - L Pattern Configurations



#### SA - Sterile Access Configurations



# Multiport Valves

Multiport valves up to size DN100 (4") and larger nominal diameters and nominal diameter combinations are available. Within this range, all tube standards, tube end orientations and other application specific customized blocks can be specified.

## Example Drawing Multiport Block Valve with Main Line Open

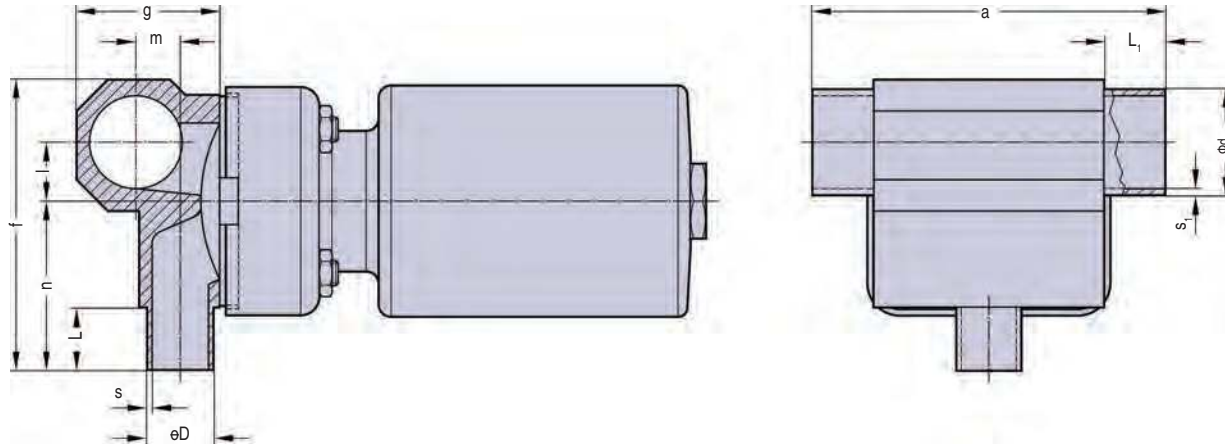


Fig. 1



Fig. 2



Fig. 3



Fig. 4



Fig. 5

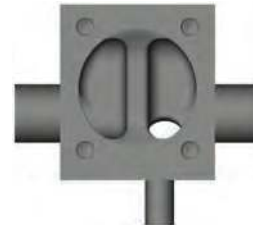


Fig. 6

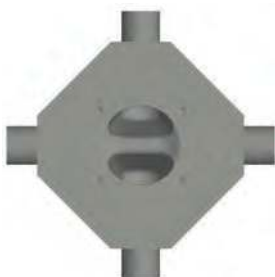


Fig. 7



Fig. 8



Fig. 9



# Tank Bottom Valves

The tank bottom valve is designed for applications in the aseptic process industry offering a pocket-free interior surface, minimized sump, eliminating entrapment areas and minimizing flow resistance thus reducing the potential for process contamination. The tank bottom valve incorporates the same features and performance of a standard diaphragm valve utilizing the same valve components for a flush mounted tank bottom valve or side mounted tank and sample valve.

The tank valve body is machined as standard from solid bar stock material 1.4435/316L ASME BPE and other alloy materials are available according to the specification. The standard design offers one valve port outlet. There are a number of different options available for sampling, sterilization and multi-outlet configurations that are standard in the product range of customized solutions.

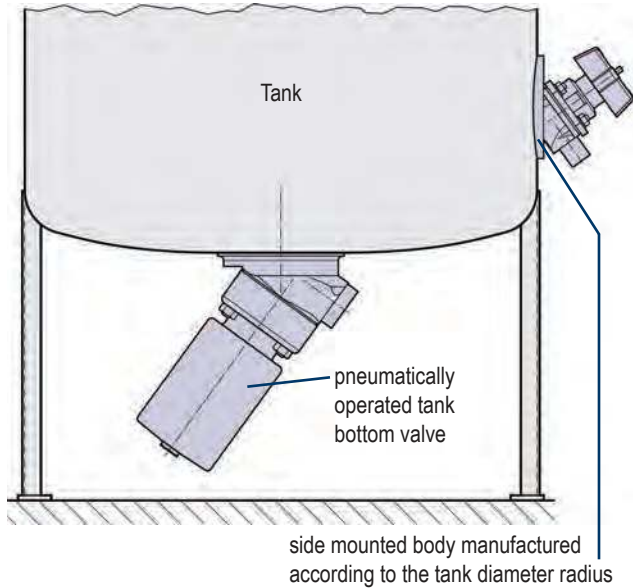
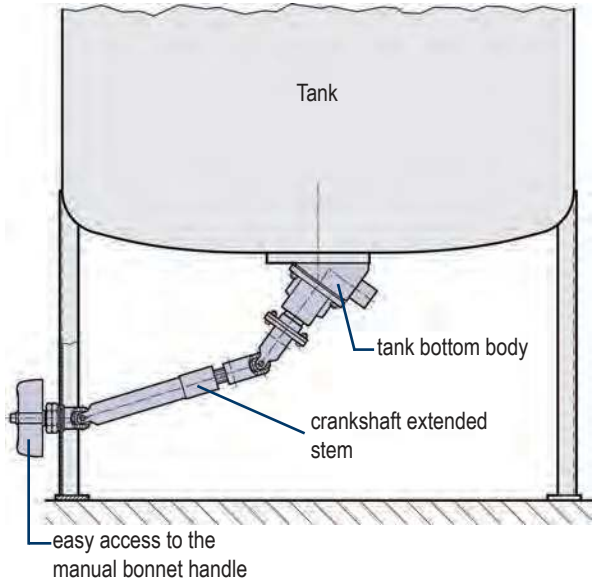
It is preferred to weld in the tank valve directly in the vessel. Mounting the valve directly to the tank minimizes the hold up volume, the most important criteria for this application. If removal of the tank valve from the tank is required, versions are offered with flange or clamp connections.

Tank bottom valves are typically used for tank discharge, draining, sampling, cleaning and/or sterilizing, rinsing and isolation of down stream processing.

The outlet port of the tank valve is available with all butt weld tube end standards, aseptic clamp (see page 27) or other special ends. The size range available is the same as the two-way valve.

## Features

- tank body machined from a solid bar stock material
- material 1.4435/316L ASME BPE
- other alloy options available as specified
- minimized dead leg and internal sump
- optional manual operation via an extended crankshaft stem



manual



pneumatically operated



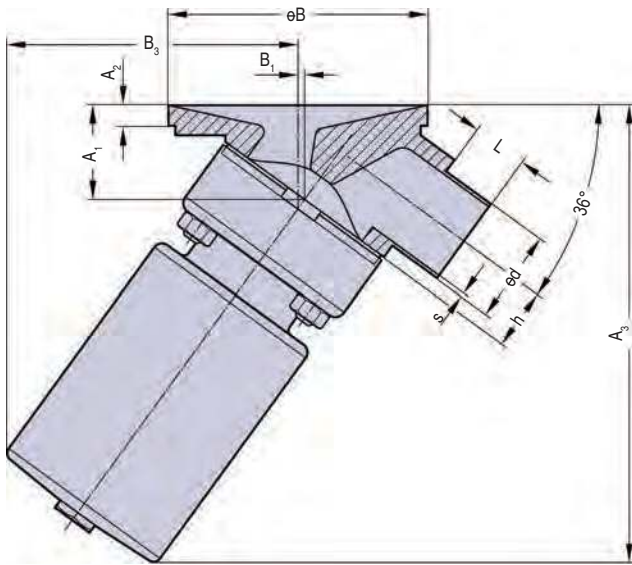
manual



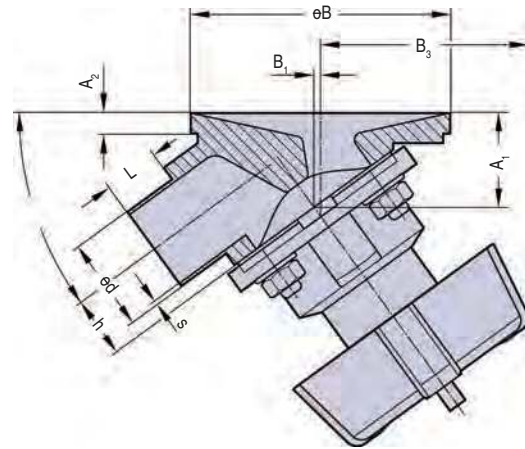
pneumatically operated

# Tank Bottom Valves

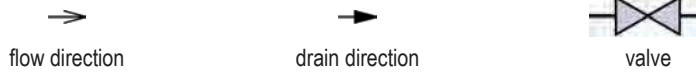
**Example Drawing:  
Pneumatically Operated**



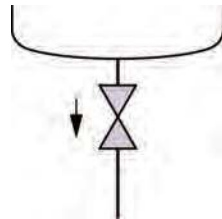
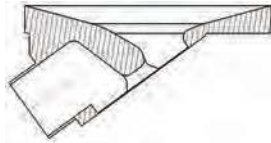
**Example Drawing:  
Manually Operated**



The following two pages show examples of standard and customized designs of tank diaphragm valves. These include options for sampling, sterilization and multi-outlet configurations.

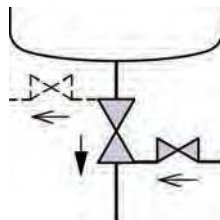


## Position One: 1x Valve Port



- standard tank bottom body
- tank body for the tank bottom

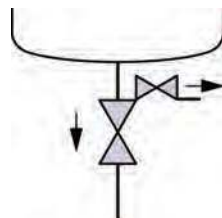
## Position Two: 1x Valve Machined From Bar Stock



- 3/1 with one welded valve, tank side left
- 3/1 with one welded valve, tank side right
- 3/1 with one welded valve, outlet left
- 3/1 with one welded valve, outlet right
- 4/1 with one welded valve, tank side left and one welded valve, outlet right

Note: For all options the welded valve is rotated into the self-draining position and extended to eliminate interference with the tank bottom.

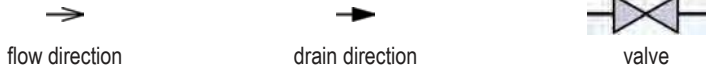
## Position Three: 3/2



- 1x main valve
- 1x sample valve, tank side right

Note: Like position two but includes an integral sample valve tank side. Right side and left side options are available and are fully drainable.

# Tank Bottom Valves



## Position Four: 3/2

- 1x main valve
- 1x sample valve, outlet left

Note: Like position two but includes an integral outlet valve. Right side and left side options are available and are fully drainable.



## Position Five: 4/3

- 1x main valve
- 1x sample valve, tank side right
- 1x CIP / SIP cleaning outlet, valve left

Note: Like position two but includes an integral valves that are fully drainable.



## Position Six: 3/1

- 1x main valve
- 2x outlet port for loop installation or as two access ports



## Position Seven: 5/4

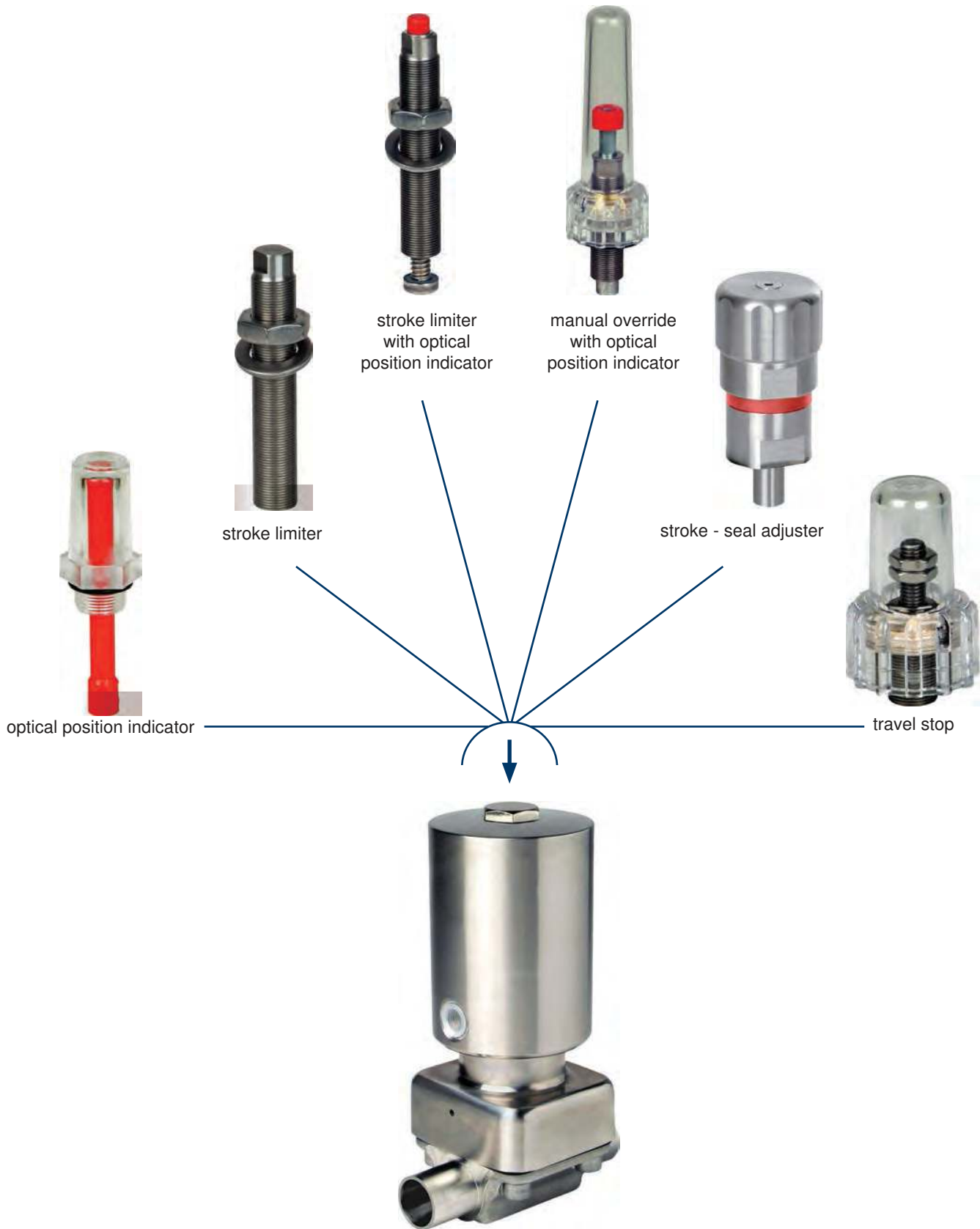
- 4x main valves
- 1x port

Note: Application with four internal tank partitions.



# System Components and Accessories

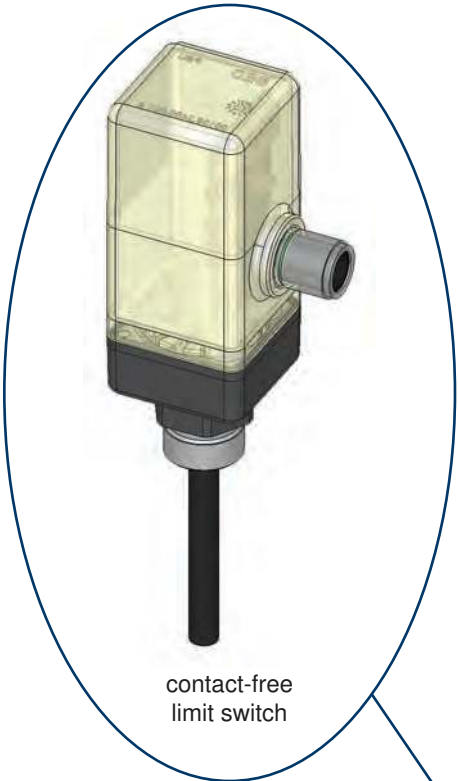
## Manual Adjustment - Optical Indication



• Combination of manual adjustments with switch boxes are available upon request

# System Components and Accessories

## Electrical Switch Boxes - Pilot Control



contact-free limit switch



limit switch open position



control head switch for open and close with optical indicator

as-interface control head switch for open and close position with optical indicator



pilot valve for manifold mounting



pilot valve for direct mounting



- Combination of manual adjustments with switch boxes are available upon request

## Glossary of Terms

**Annealing:** a treatment process for steel for the purpose of reducing hardness, improving machinability, facilitating cold working or producing a desired mechanical, physical or other property.

**Automatic Welding:** welding with equipment that performs the welding operation without adjustment of the controls by a welding operator. The equipment may or may not perform the loading and unloading of the work (see also machine welding).

**Bioprocessing:** the creation of a product utilizing a living organism

**Bioprocessing Equipment:** equipment, systems or facilities used in the creation of products utilizing living organisms

**Clean-In-Place (CIP):** internally cleaning a piece of equipment without relocation or disassembly. The equipment is cleaned but not necessarily sterilized. The cleaning is normally done by acid, caustic or a combination of both with water-for-injection (WFI) rinse.

**Controlled Sulfur:** in weld ends of 316L materials used in BPE installations, the sulfur content must be between .005% and .017% to assure better orbital welding.

**Corrosion:** a chemical or electrochemical interaction between a metal and its environment, which results in changes in the property of the metal. This may lead to impairment of the function of the metal, the environment and/or the technical system involved.

**Durometer:** measurement of hardness related to the resistance to penetration of an indenter point in to a material as typically determined by ASTM D2240.

**Elastomeric Material:** a material that can be stretched or compressed repeatedly and, upon immediate release of stress, will return to its approximate original size.

**Electropolishing:** a controlled electrochemical process utilizing acid electrolyte, DC current, anode and cathode to smooth the surface by removal of metal.

**Fluoropolymer:** polymer material having a carbon chain either partially or completely bonded to fluorine atoms. FKM (Viton™) and PTFE are examples of this material type.

**Gas Tungsten-Arc Welding (GTAW):** an arc welding process that produces coalescence of metals by heating them with an arc between a tungsten (non-consumable) electrode and the work. Shielding is obtained from a gas or gas mixture. (This process is sometimes called TIG welding, a non-preferred term.) GTAW may be performed by adding filler material to the weld or by a fusion process in which no filler is added.

**Gasket:** static seal made from deformable material compressed between two mating surfaces.

## Glossary of Terms

**Heat Number:** an alphanumeric identification of a stated tonnage of metal obtained from a continuous melting in a furnace.

**Heat-Affected Zone:** that portion of the base metal that has not been melted, but whose microstructure or mechanical properties have been altered by the heat of welding or cutting.

**Hygienic Clamp Joint:** a tube outside diameter union consisting of two neutered ferrules having flat faces with a concentric groove and mating gasket that is secured with a clamp, providing a non-protruding, recessless product contact surface.

**Machine Welding:** welding with equipment that performs the welding operation under the constant observation and control of a welding operator. The equipment may or may not perform the loading and unloading of the works. (see also automatic welding).

**Manual Welding:** welding in which the entire welding operation is performed and controlled by hand.

**Meandering:** of or pertaining to a weld bead that deviates from side to side across the weld joint rather than tracking the joint precisely. Note the controlled sulfur content in BPE weld material.

**Nick:** a surface void anomaly caused by material removal or compression from the surface, whose bottom surface is usually irregular.

**Orbital Welding:** automatic or machine welding of tubes or pipe in-place with the electrode rotating (or orbiting) around the work. Orbital welding can be done with the addition of filler material or as a fusion process without the addition of filler.

**Passivation:** removal of exogenous iron or iron from the surface of stainless steels and higher alloys by means of a chemical dissolution, most typically by a treatment with an acid solution that will remove the surface contamination and enhance the formation of the passive layer.

**Pipe:** pipe size is determined by diameter and either schedule, series or SDR. For bioprocessing equipment, pipe does not include tube.

**Pit:** a small surface void resulting from a localized loss of base material.

**Pressure Rating:** pressure at which a system is designed to operate, allowing for applicable safety factors.

**Profilometer:** an instrument for the measurement of the degree of surface roughness.

**R<sub>a</sub> :** log of the arithmetic mean of the surface profile.

## Glossary of Terms

**Sanitary (hygienic) Weld:** generally considered to be a groove weld in a square butt joint made by the GTAW (or plasma) process as a fusion weld without the addition of filler material. A sanitary weld must be completely penetrated on the weld ID, with little or no discoloration due to oxidation and be otherwise without defects that would interfere with maintenance in a clean and sterile condition.

**Schedule:** dimensional standard for pipe as defined by ASTM.

**Seal Face:** surface point on which a seal is achieved.

**Surface Finish:** all surfaced as defined by Part SF of the current ASME BPE Standard and/or the owner/user or manufacturer and referred in  $R_a$   $\mu\text{in.}$  or  $\mu\text{m.}$

**Tube:** tube is sized by its nominal outside diameter. For bioprocessing equipment, tube does not include pipe.

**Waviness:** undulations or rippling of the surfaces.







## Terms

Net 30 Days. Pricing subject to change without notice.

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### Cash Discounts

Invoice dated 1st to the 15th of the month are subject to a 1% discount if paid by the 25th of the month.

Invoices dated the 16th to the end of the month are subject to a 1% discount if paid by the 10th of the following month.

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### Prepaid Freight Allowance

Orders totaling \$1,500.00 net value on fittings, \$3,500.00 net value on valves for immediate shipment to a single location within the continental United States will be shipped freight prepaid. Any items back-ordered against the same order will also be shipped prepaid as they become available. Method of shipment will be the most economical means available to Dixon and does not include priority shipments such as air freight.

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### Returns

Material shipped as ordered may be returned only with Dixon Sanitary's permission. The customer must call to receive a Return Goods Authorization (RGA) number prior to returning product to Dixon Sanitary. **Shipping will be at the customer's expense to Dixon Sanitary in Pewaukee, Wisconsin only.** A credit memo will be issued subject to a 20% restocking fee pending inspection from Dixon Sanitary. All fittings must be returned unused, in resalable condition and with ends capped.

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### DUTY TO WARN: Applied Weld Seam Quality

We provide products in accordance with the required materials specifications.

The quality of welds applied to our products is beyond the scope of our influence, as welds are often dependent upon a reaction of the alloying elements and upon the prevailing technical conditions at the place of use. Therefore we essentially exclude any guarantee for the welding quality of the products supplied by us. The purchaser accepts upon dispatch of the goods that any complaint concerning the welding shall be excluded. The purchaser shall therefore not be entitled to make claims of impairment, change or to demand return or demand any consequential costs or pecuniary damages due to the welding results.

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### Limited Warranty

Dixon Sanitary, a division of Dixon Valve and Coupling Company, (herein called Dixon Sanitary) warrants the products described herein, and manufactured by Dixon Sanitary to be free from defects in material and workmanship for a period of one (1) year from date of shipment by Dixon Sanitary under normal use and service. It's sole obligation under this warranty being limited to repairing or replacing, as hereinafter provided, at its option any product found to Dixon Sanitary's satisfaction to be defective upon examination by it, provided that such product shall be returned for inspection to Dixon Sanitary within three (3) months after discovery of the defect. The repair or replacement of defective products will be made without charge for parts or labor. This warranty shall not apply to: (a) parts or products not manufactured exclusively for Dixon Sanitary, the warranty of such items being limited to the actual warranty extended to Dixon Sanitary by its supplier; (b) any product that has been subject to abuse, negligence, accident, or misapplication; (c) any product altered or repaired by others than Dixon Sanitary; and (d) to normal maintenance services and the replacement of service items (such as gaskets and seats) made in connection with such services. To the extent permitted by State law, this limited warranty shall extend only to the buyer and any other person reasonably expected to use or consume the goods who is injured in person by any breach of the warranty. No action may be brought against Dixon Sanitary for an alleged breach of warranty unless such action is instituted within one (1) year from the date the cause of action accrues. This limited warranty shall be construed and enforced to the fullest extent allowable by applicable State law.

**OTHER THAN THE OBLIGATION OF DIXON SANITARY SET FORTH HEREIN, DIXON SANITARY DISCLAIMS ALL WARRANTIES, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, AND ANY OTHER OBLIGATION OR LIABILITY. THE FOREGOING CONSTITUTES BRADFORD'S SOLE OBLIGATION WITH RESPECT TO DAMAGES, WHETHER DIRECT, INCIDENTAL OR CONSEQUENTIAL, RESULTING FROM THE USE OR PERFORMANCE OF THE PRODUCT.**

**Some products and sizes may be discontinued when stock is depleted, or may require a minimum quantity for ordering.**

Through its divisions and affiliated companies, Dixon is recognized as the premier manufacturer and supplier of hose fittings and accessories spanning a wide range of industrial uses. Dixon's reach includes products for food, dairy processing, beverage and brewery, mobile tankers, mining, construction, chemical processing, petroleum, oilfields, refining and manufacturing.

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### **Dixon Sanitary**

N25 W23040 Paul Road, Pewaukee, WI 53072

Customer Service: 800.789.1718

Fax: 800.789.4046

