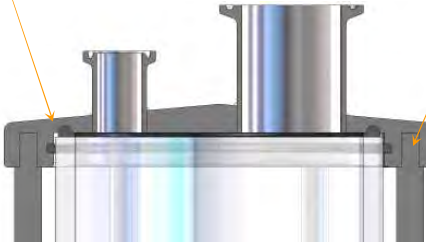


PHARMACEUTICAL BUBBLE TRAP STANDARD DESIGN FEATURES



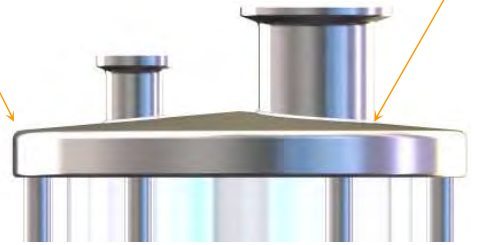
7° TAPER ON TRAP LID FOR SELF DRAINING EXTERIOR



TIE ROD THREADS ARE SELF ENCLOSED FOR EASY WIPE DOWN

ALL CORNERS ARE BROKEN WITH SOFT RADII

ALL WELDS REMOVED, SMOOTHED & POLISHED

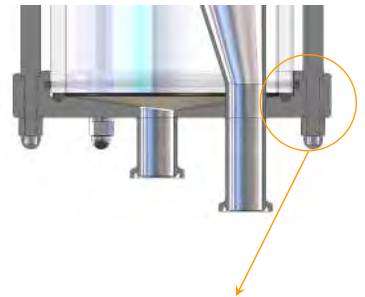


SHOULDERED TIE RODS ENSURE CORRECT O-RING COMPRESSION, MAKING RE-ASSEMBLY AND MAINTENANCE SIMPLE AND ERROR FREE

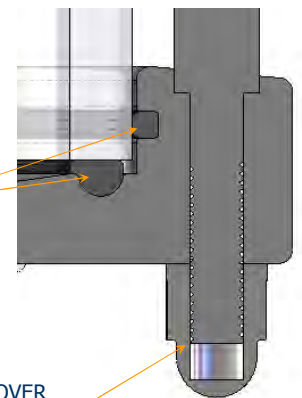


CREVICE FREE DESIGN ELIMINATES BACTERIA COLLECTION AREAS

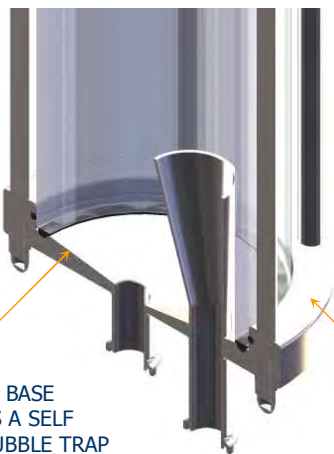
ALL SURFACES ARE ANGLED GUARANTEEING A SELF DRAINING EASILY WASHED DOWN UNIT WHEN INSTALLED IN THE UPRIGHT POSITION



EHEDG APPROVED SEALING DESIGN GUARANTEES THE MOST HYGIENIC SEALING O-RING COMBINATION ON TODAY'S PHARMACEUTICAL MARKET



7° TAPER ON BASE GUARANTEES A SELF DRAINING BUBBLE TRAP IN ACCORDANCE WITH ASME BPE 2007

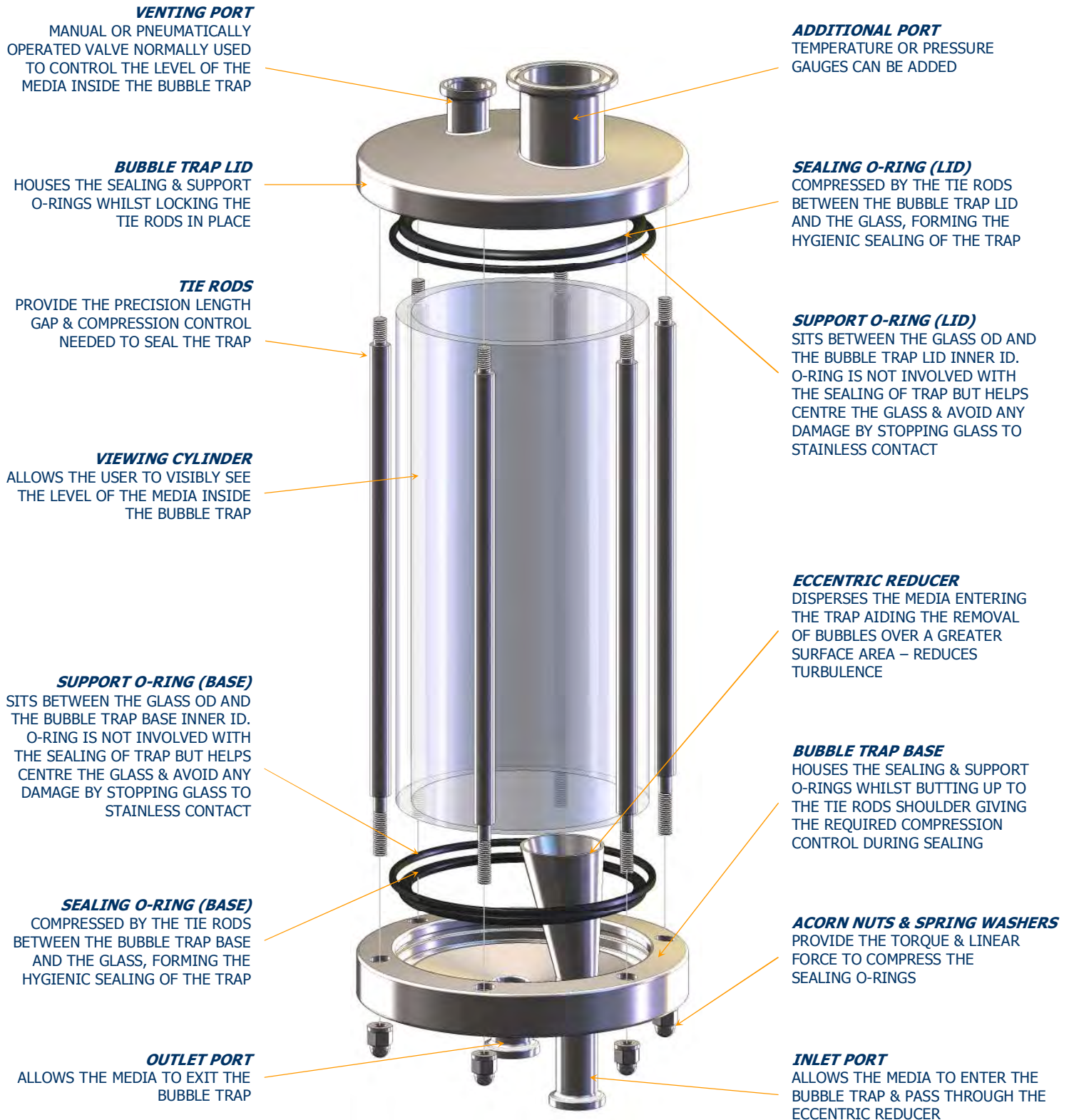


7° TAPER FOR SELF DRAINING EXTERIOR

ACORN NUTS COVER ALL EXPOSED THREADS HELPING EXTERIOR CLEANABILITY

PHARMACEUTICAL BUBBLE TRAP

EXPLODED VIEW – COMPONENT BREAKDOWN





PHARMACEUTICAL BUBBLE TRAP SIZING GUIDE

The most important feature of any bubble trap installation is the selection of the correct size trap, there are two over-riding factors that ultimately dictate which size bubble trap you require:

- # Flow Rate (Q) - Flow Rate of the media entering the bubble trap, measured in litres per minute (LPM)
- # Operating Pressure - Pressure inside the system when entering the bubble trap

When the above two factors are known a bubble trap can easily be selected from the table below :

BUBBLE TRAP - STANDARD SIZES DATA SHEET																			
B/Trap Dia. (In)	Rec. Fill Vol (litres)	Flow Rate (LPM)	Operating Pressure		Base Inlet / Outlet Ferrule (Flange) Size					Lid Controls (2 Ports) Ferrule (Flange) Size					Lid Controls (3 Ports) Ferrule (Flange) Size				
			Boro 3.3 bar (psi)	Acrylic bar (psi)	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
3"	0.5	2	7.0 (101)	7.5 (109)	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
	0.7	3			1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
	1	4			1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
4"	1	4	6.0 (87)	7.0 (102)	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
	2	8			1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
	3	12			1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
6"	2	8	5.5 (80)	6.0 (87)	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
	3	12			1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
	4	16			1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
	6	24			1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
8"	8	32	5.0 (73)	5.0 (73)	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
	10	40			1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
	12	48			1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
	6	24			1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
10"	12	48	3.5 (51)	4.0 (58)	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
	16	64			1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"
	20	80			1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"	1/2"	3/4"	1"	1 1/2"	2"

It should be noted that each separate diameter size of bubble trap overlaps the previous size, this is particularly useful as the small diameter longer length bubble trap will always have a higher pressure rating than its larger sized diameter alternative.

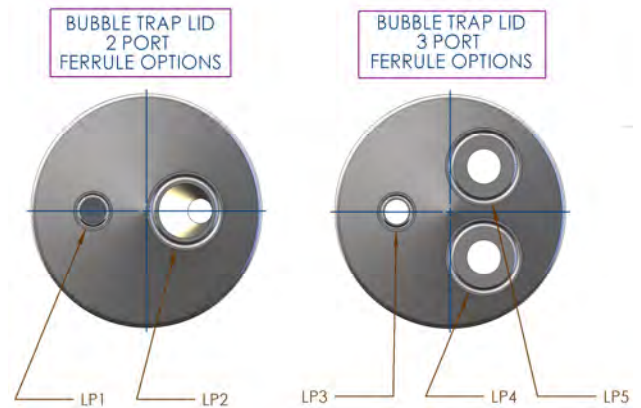
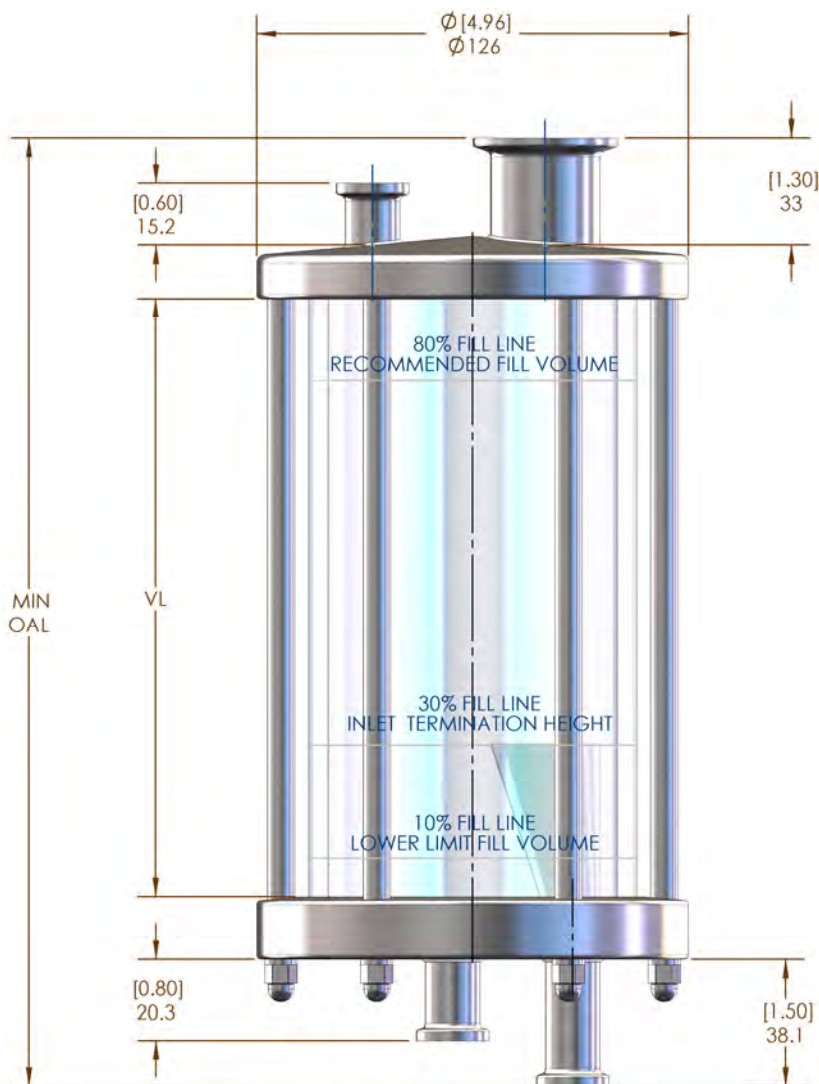
The above data is derived from the underlying principal that the media should remain inside the bubble trap for a minimum of 15 seconds (residence time) and is generated from the basic formula:

$$Rt = \frac{Rfv}{Q} \times 60$$

Rt = Residence Time (Greater Than 15 Secs)
 Rfv = Recommended Fill Volume (Litres)
 Q = Flow Rate (Litres Per Minute)

Note : If your exact flow rate is not shown on the table above, the bubble trap sized for the nearest flow rate larger / quicker than yours must be selected. This will guarantee the residence time will exceed the 15 second minimum.

PHARMACEUTICAL BUBBLE TRAP 3" DIAMETER DATA SHEET

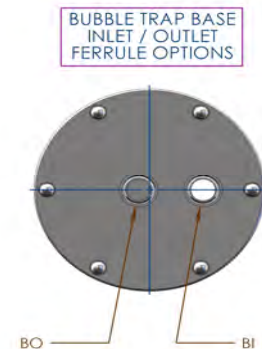


Temperature / Pressure Rating Combinations

A standard 3" Bubble Trap unit (Borosilicate 3.3 Glass Tube / EPDM Seals) is suitable for operating within the following parameters:-

Pressure: 0.0bar (0 PSI) to 7.0 bar (101 PSI)

Temperature: minus 50°C (-58°F) to 150°C (302°F)
For pressures / temperatures outside this range, we offer alternative tube / seal combinations.



3" DIAMETER BUBBLE TRAP - STANDARD CONFIGURATIONS

Standard Part # Dia-Length	Glass Length [in] mm	Rec. Fill Vol. Litres	Max Fill Vol. Litres	Max Flow Rate (LPM)	MIN OAL		VL View Length [in] mm	Base BI & BO Inlet & Outlet Ferrule Options	LP1 & LP2 2 Ports On Lid Ferrule Options	LP3, LP4 & LP5 3 Ports On Lid Ferrule Options
					Overall Length [in] mm					
03-110	[04.33] 110	0.5	0.6	2	[08.03]	204	[03.54] 090	1/2"	1/2"	1/2"
03-200	[07.87] 200	0.7	0.9	3	[11.57]	294	[07.09] 180			
03-270	[10.63] 270	1	1.2	4	[14.33]	364	[09.84] 250	3/4"	3/4"	3/4"

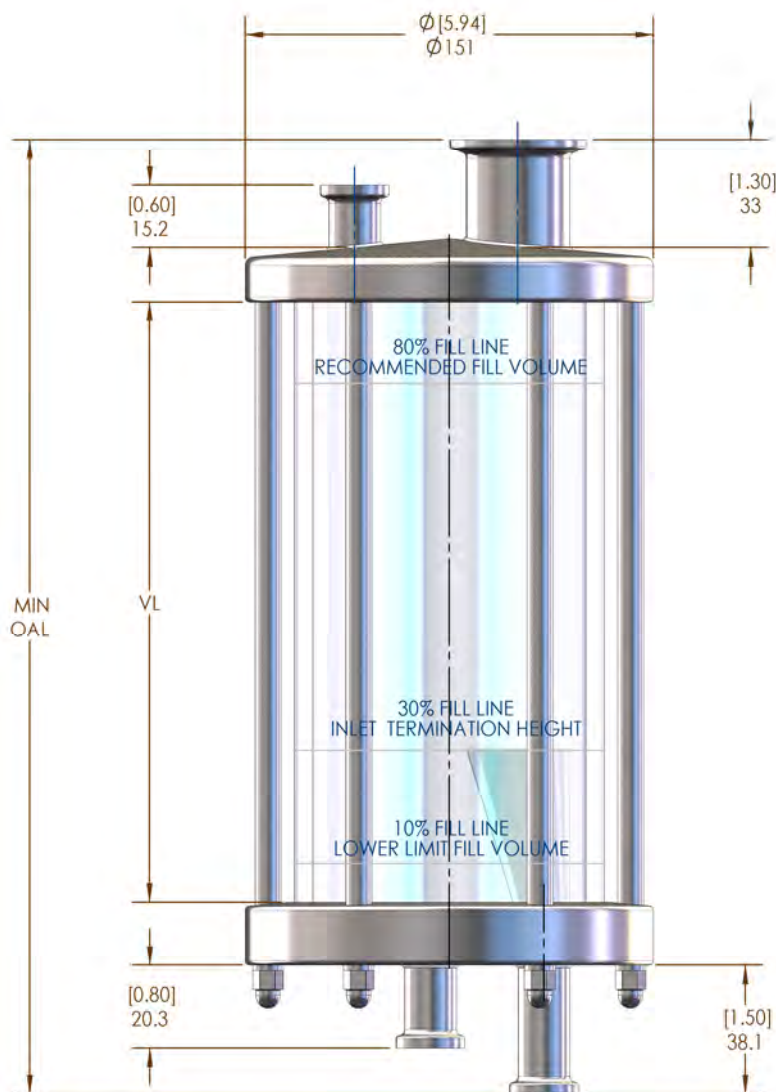
BILL OF MATERIALS

Components	Qty	Standard Material	S/Finish - Grade	Alternative Options
Bubble Trap Lid	1	316L / 1.4404	SF4 - 0.38Ra EP	C22 or AL6XN
Bubble Trap Base	1	316L / 1.4404	SF4 - 0.38Ra EP	C22 or AL6XN
Tie Rods	4	316L / 1.4404	SF3 - 0.8Ra	C22 or AL6XN
M6 Domed Nut	4	316L / 1.4404	SF3 - 0.8Ra	C22 or AL6XN
Spring Washer	8	316 / A4	SF3 - 0.8Ra	C22 or AL6XN
Viewing Cylinder	1	3.3 Borosilicate	Flame Polished	USP Class VI Acrylic
O-Rings	4	EPDM	USP Class VI	VITON or FEP Silicone

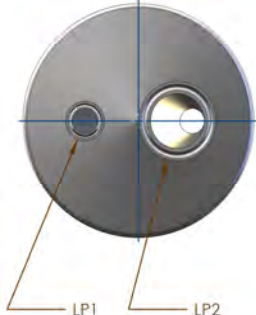


PHARMACEUTICAL BUBBLE TRAP

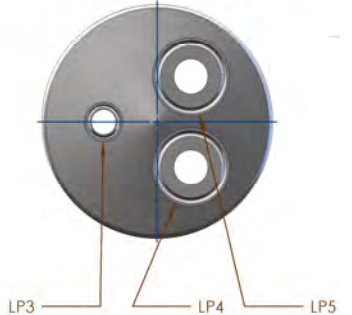
4" DIAMETER DATA SHEET



BUBBLE TRAP LID
2 PORT
FERRULE OPTIONS



BUBBLE TRAP LID
3 PORT
FERRULE OPTIONS



Temperature / Pressure Rating Combinations

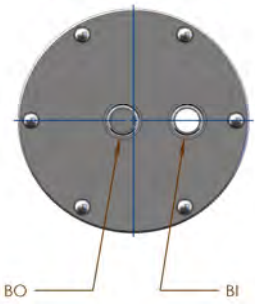
A standard 4" Bubble Trap unit (Borosilicate 3.3 Glass Tube / EPDM Seals) is suitable for operating within the following parameters:-

Pressure: 0.0 bar (0 PSI) to 6.0 bar (87 PSI)

Temperature: minus 50°C (-58°F) to 150°C (302°F)

For pressures / temperature outside this range, we offer alternative tube / seal combinations.

BUBBLE TRAP BASE
INLET / OUTLET
FERRULE OPTIONS



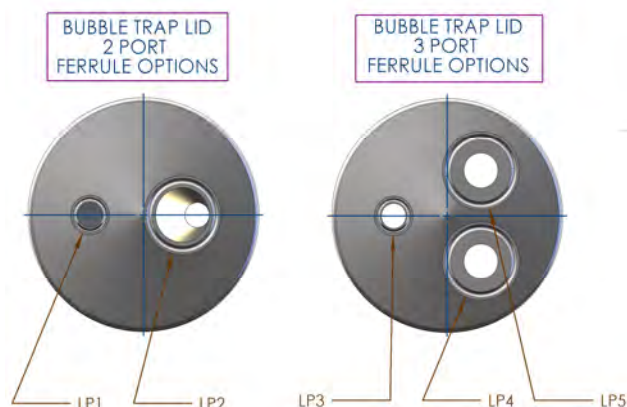
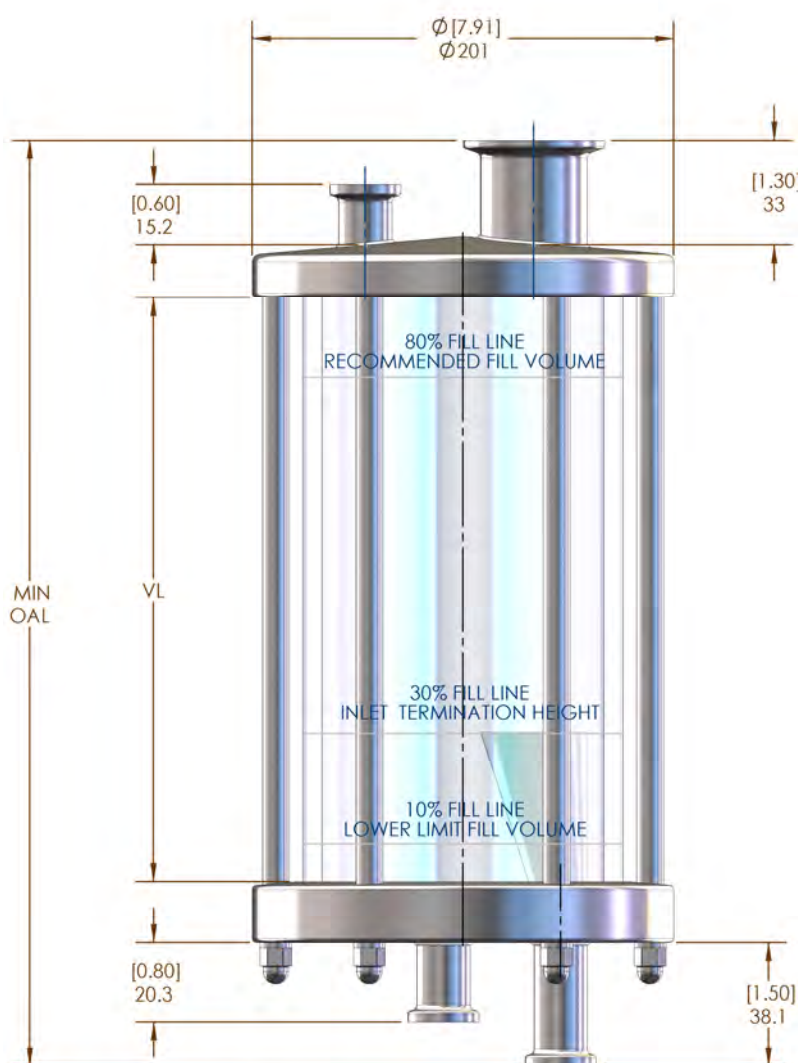
4" DIAMETER BUBBLE TRAP - STANDARD CONFIGURATIONS

Standard Part # Dia-Length	Glass Length [in] mm	Rec. Fill Vol. Litres	Max Fill Vol. Litres	Max Flow Rate (LPM)	MIN OAL		Base BI & BO Inlet & Outlet Options	VL View Length [in] mm	LP1 & LP2 2 Ports On Lid Options		LP3, LP4 & LP5 3 Ports On Lid Options	
					Overall Length [in] mm	View Length [in] mm						
04-150	[05.90] 150	1	1.2	4	[09.61] 244	[05.12] 130	1/2"		1/2"		1/2"	
04-310	[12.20] 310	2	2.5	8	[15.91] 404	[11.42] 290	3/4"		3/4" 1"		3/4"	
04-470	[18.50] 470	3	3.8	12	[22.20] 564	[17.72] 450	1"		1 1/2"		1"	

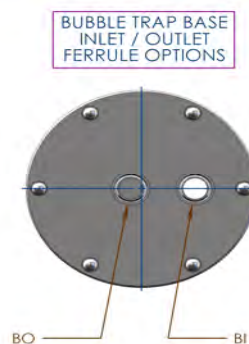
BILL OF MATERIALS

Components	Qty	Standard Material	S/Finish - Grade	Alternative Options
Bubble Trap Lid	1	316L / 1.4404	SF4 - 0.38Ra EP	C22 or AL6XN
Bubble Trap Base	1	316L / 1.4404	SF4 - 0.38Ra EP	C22 or AL6XN
Tie Rods	4	316L / 1.4404	SF3 - 0.8Ra	C22 or AL6XN
M6 Domed Nut	4	316L / 1.4404	SF3 - 0.8Ra	C22 or AL6XN
Spring Washer	8	316 / A4	SF3 - 0.8Ra	C22 or AL6XN
Viewing Cylinder	1	3.3 Borosilicate	Flame Polished	USP Class VI Acrylic
O-Rings	4	EPDM	USP Class VI	VITON or FEP Silicone

PHARMACEUTICAL BUBBLE TRAP 6" DIAMETER DATA SHEET



Temperature / Pressure Rating Combinations
 A standard 6" Bubble Trap unit (Borosilicate 3.3 Glass Tube / EPDM Seals) is suitable for operating within the following parameters:-
Pressure: 0.0 bar (0 PSI) to 5.5 bar (80 PSI)
Temperature: minus 50°C (-58°F) to 150°C (302°F)
 For pressures / temperature outside this range, we offer alternative tube / seal combinations



6" DIAMETER BUBBLE TRAP - STANDARD CONFIGURATIONS

Standard Part # Dia-Length	Glass Length [in] mm	Rec. Fill Vol. Litres	Max Fill Vol. Litres	Max Flow Rate (LPM)	MIN OAL	VL	Base BI & BO Inlet & Outlet Options	LP1 & LP2 2 Ports On Lid Options	LP3, LP4 & LP5 3 Ports On Lid Options
					Overall Length [in] mm	View Length [in] mm			
06-140	[05.51] 140	2	2.5	8	[09.21] 234	[04.72] 120	3/4" 1" 1 1/2"	1/2" 3/4" 1" 1 1/2" 2"	1/2" 3/4" 1" 1 1/2"
06-210	[08.27] 210	3	3.8	12	[11.97] 304	[07.48] 190			
06-280	[11.02] 280	4	5.0	16	[14.72] 374	[10.24] 260			
06-420	[16.54] 420	6	7.5	24	[20.24] 514	[15.74] 400			
06-560	[22.05] 560	8	10.0	32	[25.75] 654	[21.26] 540			

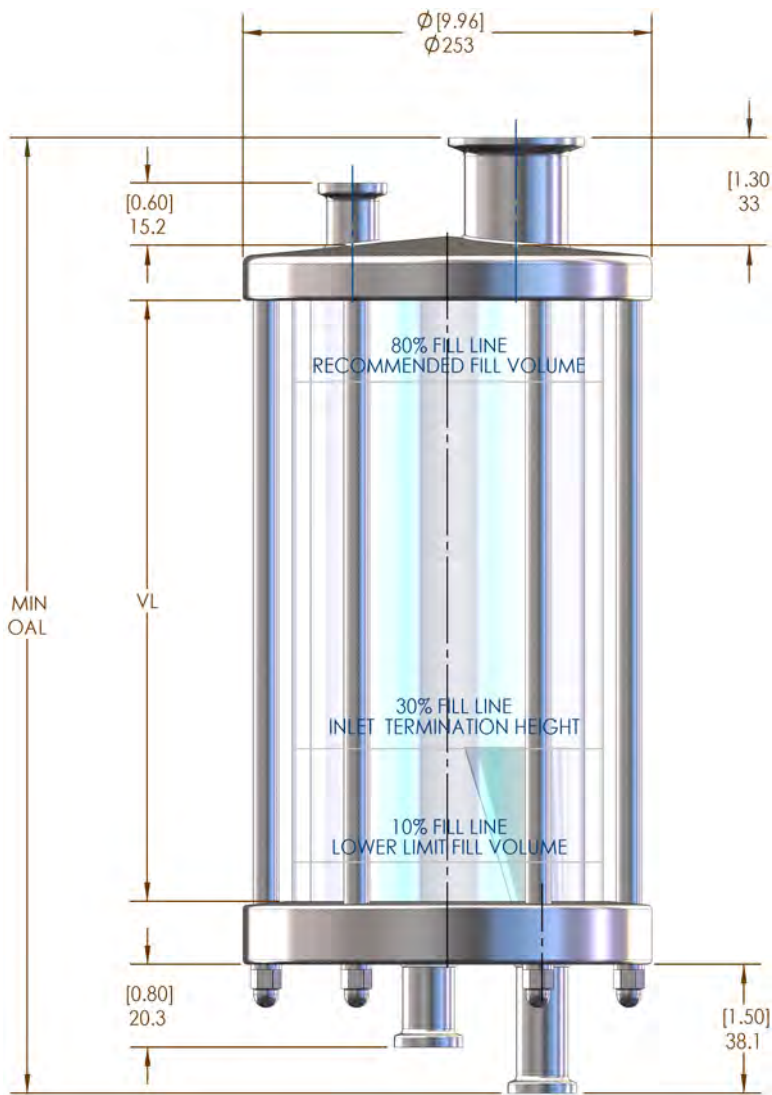
BILL OF MATERIALS

Components	Qty	Standard Material	S/Finish - Grade	Alternative Options
Bubble Trap Lid	1	316L / 1.4404	SF4 - 0.38Ra EP	C22 or AL6XN
Bubble Trap Base	1	316L / 1.4404	SF4 - 0.38Ra EP	C22 or AL6XN
Tie Rods	6	316L / 1.4404	SF3 - 0.8Ra	C22 or AL6XN
M6 Domed Nut	6	316L / 1.4404	SF3 - 0.8Ra	C22 or AL6XN
Spring Washer	12	316 / A4	SF3 - 0.8Ra	C22 or AL6XN
Viewing Cylinder	1	3.3 Borosilicate	Flame Polished	USP Class VI Acrylic
O-Rings	4	EPDM	USP Class VI	VITON or FEP Silicone

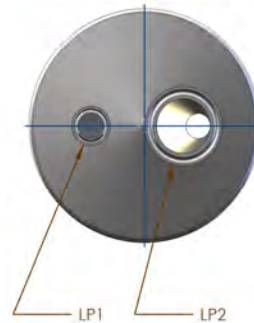


PHARMACEUTICAL BUBBLE TRAP

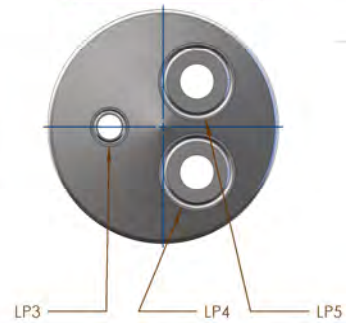
8" DIAMETER DATA SHEET



BUBBLE TRAP LID
2 PORT
FERRULE OPTIONS



BUBBLE TRAP LID
3 PORT
FERRULE OPTIONS



Temperature / Pressure Rating Combinations

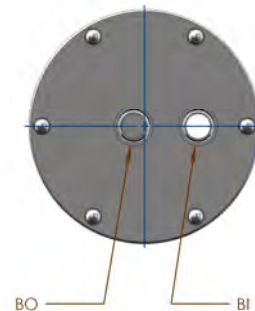
A standard 8" Bubble Trap unit (Borosilicate 3.3 Glass Tube / EPDM Seals) is suitable for operating within the following parameters:-

Pressure: 0.0 bar (0 PSI) to 5.0 bar (73 PSI)

Temperature: minus 50°C (-58°F) to 150°C (302°F)

For pressures / temperature outside this range, we offer alternative tube / seal combinations

BUBBLE TRAP BASE
INLET / OUTLET
FERRULE OPTIONS



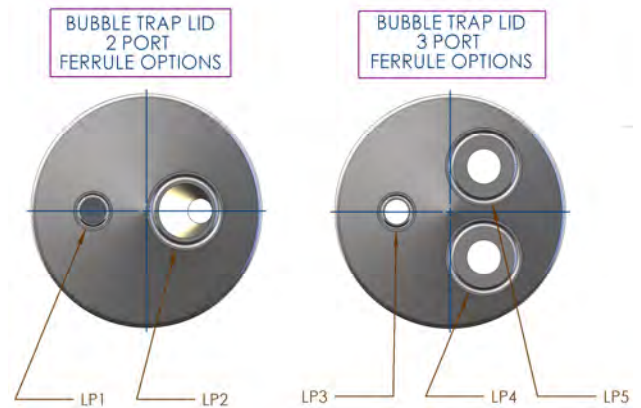
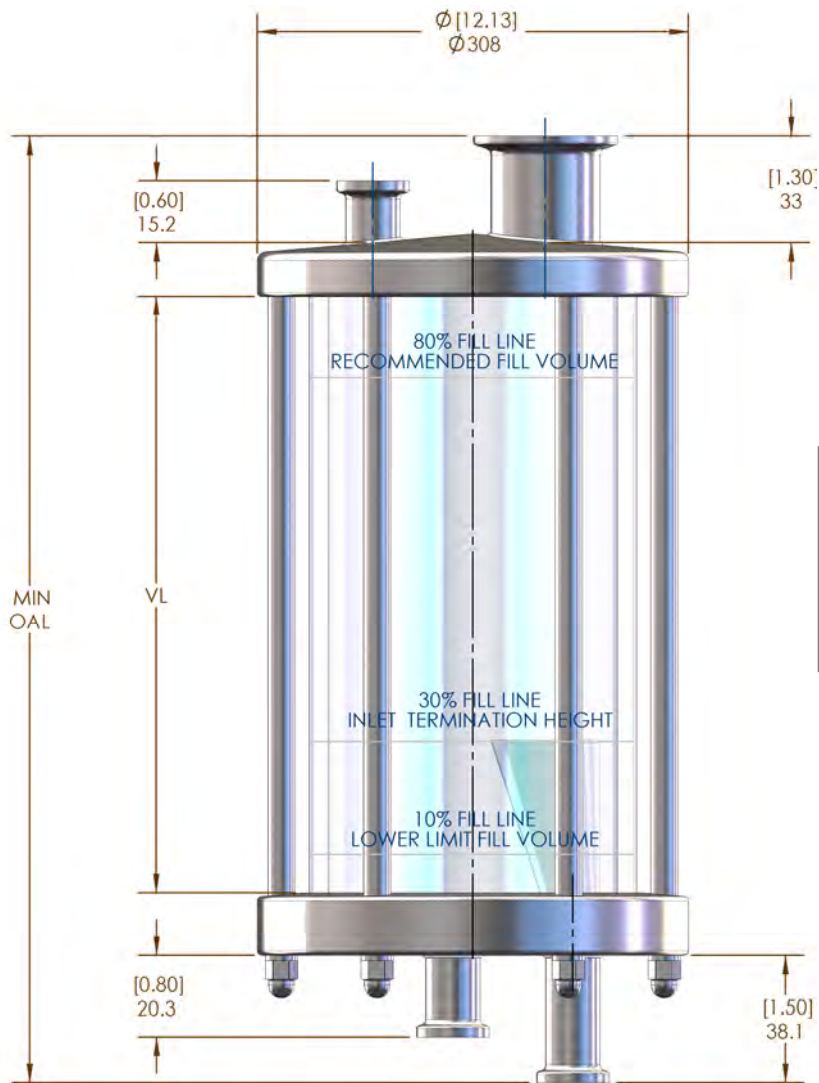
8" DIAMETER BUBBLE TRAP - STANDARD CONFIGURATIONS

Standard Part # Dia-Length	Glass Length [in] mm	Rec. Fill Vol. Litres	Max Fill Vol. Litres	Max Flow Rate (LPM)	MIN OAL		VL	Base BI & BO Inlet & Outlet Options	LP1 & LP2 2 Ports On Lid Options	LP3, LP4 & LP5 3 Ports On Lid Options
					Overall Length [in] mm	View Length [in] mm	Inlet & Outlet Options		Options	Options
08-240	[09.45] 240	6	7.5	24	[13.15] 334	[08.66] 220	1"	1/2"	1/2"	
08-330	[12.99] 330	8	10.0	32	[16.69] 424	[12.20] 310	1 1/2"	3/4" 1"	3/4"	
08-410	[16.14] 410	10	12.5	40	[19.84] 504	[15.35] 390	2"	1 1/2"	1"	
08-490	[19.29] 490	12	15.0	48	[23.00] 584	[18.50] 470		2"	1 1/2"	

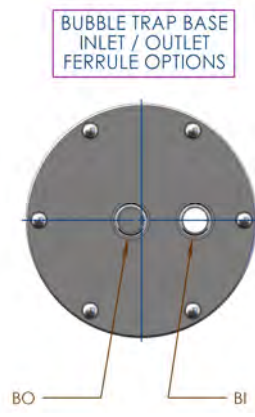
BILL OF MATERIALS

Components	Qty	Standard Material	S/Finish - Grade	Alternative Options
Bubble Trap Lid	1	316L / 1.4404	SF4 - 0.38Ra EP	C22 or AL6XN
Bubble Trap Base	1	316L / 1.4404	SF4 - 0.38Ra EP	C22 or AL6XN
Tie Rods	8	316L / 1.4404	SF3 - 0.8Ra	C22 or AL6XN
M8 Domed Nut	8	316L / 1.4404	SF3 - 0.8Ra	C22 or AL6XN
Spring Washer	16	316 / A4	SF3 - 0.8Ra	C22 or AL6XN
Viewing Cylinder	1	3.3 Borosilicate	Flame Polished	USP Class VI Acrylic
O-Rings	4	EPDM	USP Class VI	VITON or FEP Silicone

PHARMACEUTICAL BUBBLE TRAP 10" DIAMETER DATA SHEET



Temperature / Pressure Rating Combinations
 A standard 10" Bubble Trap unit (Borosilicate 3.3 Glass Tube / EPDM Seals) is suitable for operating within the following parameters:-
Pressure: 0.0 bar (0 PSI) to 3.5 bar (51 PSI)
Temperature: minus 50°C (-58°F) to 150°C (302°F)
 For pressures / temperature outside this range, we offer alternative tube / seal combinations



10" DIAMETER BUBBLE TRAP - STANDARD CONFIGURATIONS

Standard Part # Dia-Length	Glass Length [in] mm	Rec. Fill Vol. Litres	Max Fill Vol. Litres	Max Flow Rate (LPM)	MIN OAL	VL	Base BI & BO Inlet & Outlet Options	LP1 & LP2 2 Ports On Lid Options		LP3, LP4 & LP5 3 Ports On Lid Options	
					Overall Length [in] mm	View Length [in] mm					
10-300	[11.81] 300	12	15.0	48	[15.51] 394	[11.02] 280	1"	1/2" 3/4"	1/2" 3/4"		
10-400	[15.75] 400	16	20.0	64	[19.45] 494	[14.96] 380	1 1/2"	3/4" 1 1/2"	3/4" 1 1/2"		
10-500	[19.69] 500	20	25.0	80	[23.39] 594	[18.90] 480	2"	2"	2"		

BILL OF MATERIALS

Components	Qty	Standard Material	S/Finish - Grade	Alternative Options
Bubble Trap Lid	1	316L / 1.4404	SF4 - 0.38Ra EP	C22 or AL6XN
Bubble Trap Base	1	316L / 1.4404	SF4 - 0.38Ra EP	C22 or AL6XN
Tie Rods	8	316L / 1.4404	SF3 - 0.8Ra	C22 or AL6XN
M8 Domed Nut	8	316L / 1.4404	SF3 - 0.8Ra	C22 or AL6XN
Spring Washer	16	316 / A4	SF3 - 0.8Ra	C22 or AL6XN
Viewing Cylinder	1	3.3 Borosilicate	Flame Polished	USP Class VI Acrylic
O-Rings	4	EPDM	USP Class VI	VITON or FEP Silicone