

BINKS[®]

Instruction Manual

Standard Surge Eliminator

- **Standard 104052 - X**
- **Flushable 104053 - X - X**

**BINKS****Product Description**Surge chamber/eliminator -104050,
104052, 104053, 108120,**This Product is designed for use with:** Solvent and Water based Materials**Suitable for use in hazardous area:** Zone 1 & 2**Protection Level:** II 2 G X T4**Manufacturer:** Binks,
Justus-von-Liebig - Strasse,
63128 Dietzenbach. DE**EU Declaration of Conformity****We: Binks declare that the above product conforms with the Provisions of:**

Machinery Directive 2006/42/EC

ATEX Directive 94/9/EC

Pressure Equipment Regulations 1999 (SI 1999/2001)

by complying with the following statutory documents and harmonized standards:

EN ISO 12100: Safety of Machinery - General Principles for Design

EN ISO 4413: Hydraulic Fluid Power - General Rules and safety requirements

EN ISO 4414: Pneumatic Fluid Power - General Rules and safety requirements

EN 12621: Machinery for the supply and circulation of coating materials under pressure - Safety requirements

EN1127-1: Explosive atmospheres - Explosion prevention - Basic concepts

EN 13463-1: Non electrical equipment for use in potentially explosive atmospheres - Basic methods and requirements

EN 13463-5: Non electrical equipment for use in potentially explosive atmospheres - Protection by constructional safety

Providing all conditions of safe use stated within the product manuals have been complied with and that the final equipment into which this product is installed has been re-assessed as required, in accordance with essential health and safety requirements of the above standards, directives and statutory instruments and also installed in accordance with any applicable local codes of practice.

D Smith (General Manager)
01 November 2012

Index

Section

- 1.1 General Description
- 1.2 Operating Principle
- 1.3 Specification
- 1.4 Fitting Selection - Standard
- 1.5 Fitting Selection - Flushable

- 2.1 Installation – Dimensions
- 2.2 Installation – General

- 3.1 Assembly drawing & Parts List - Standard
- 3.2 Assembly drawing & Parts List - Flushable
- 3.3 Assembly Procedure

- 4.1 Important Information
- 4.2 Maintenance
- 4.3 Fault Finding
- 4.4 Spare Parts Lists

- 5.1 Accessories

General Description – Section 1.1

Introduction

A complete range of Binks surge elimination chambers is available to suit both technical and commercial requirements.

The surge elimination chamber is designed to counteract fluctuations in fluid pressure normally seen during a reciprocating pump stroke change over. The fluid chamber is suitable for use with waterborne and conventional paint types

Both conventional and 'Active' units are available with flow through flushable or single port connections

Surge elimination chambers should be located on the fluid outlet of the circulating pump for optimum operational performance.

Models are available with a range of standard or customer specified connections, see selection chart (section 1.4) for variants. The required connections are factory fitted and not intended for removal in the field.

Conventional Surge Eliminators

Features

- Low maintenance only periodic charging with compressed air
- Stainless Steel and Aluminium construction
- Optional Flow through flushable fluid chamber
- Fluid connection options available
- Option for direct mounting to the paint pump

Operating Principle – Section 1.2

Surge Eliminators

The surge eliminators consist of a lower fluid and upper air chamber separated by a flexible diaphragm. The air chamber is charged with compressed air so that the air pressure is equal to the fluid pressure required.

Fluid is pumped into and around the circulation system pipework filling the lower chamber.

At the point of pump stroke change over, the fluid pressure and flow momentarily drops. The diaphragm deflects downwards due to the now higher air pressure in the upper chamber and applies pressure to the fluid in the lower chamber, thus compensating for the reduction in fluid pressure and flow.

Specification – Section 1.3

Air Chamber Connections

Air Quality recommended	ISO 8573.1. to 3.6.3
All models (Aluminium - black anodised finish)	¼" BSP H (ball valve)

Fluid Chamber Connections

104052 Standard Model - Fluid Connection Examples (see selection table 1.4)

Model 104052 - S	Inlet – 1" Sanitary
Model 104052 - T	Inlet – ¾" NPT
Model 104052 - U	Inlet – ¾" BSPT

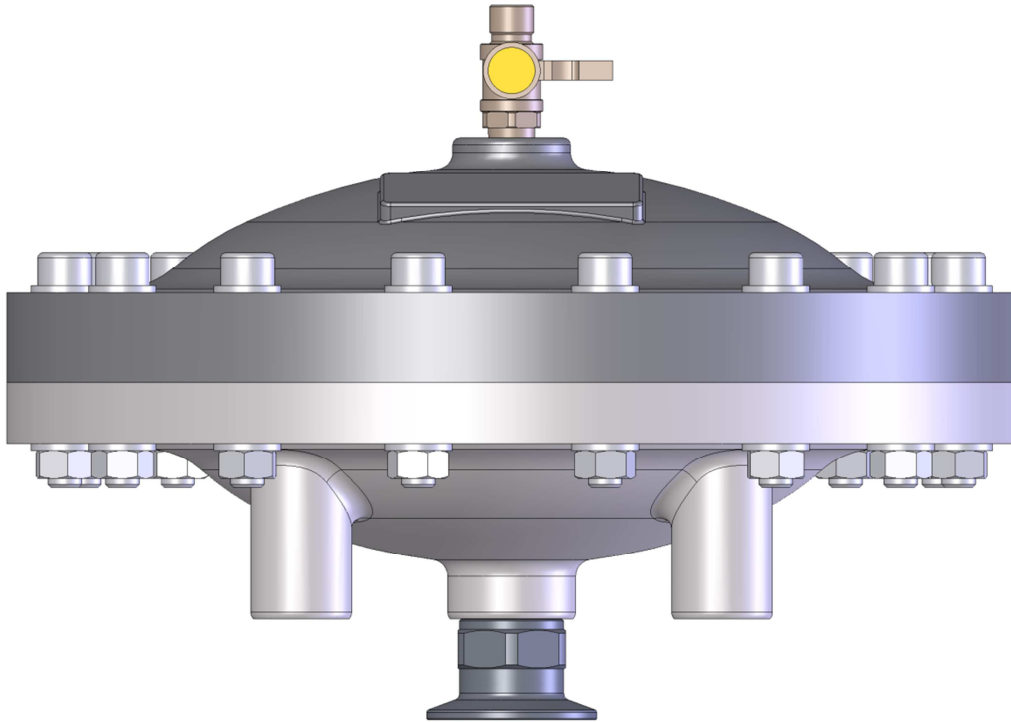
104053 Flushable Model - Fluid Connection Examples (see selection table 1.5)

Model 104053 - B - B	Inlet – 2" Sanitary	Outlet – 2" Sanitary
Model 104053 - C - C	Inlet – 1 ½" Sanitary	Outlet – 1 ½" Sanitary
Model 104053 - L - L	Inlet – 1" Sanitary	Outlet – 1" Sanitary

Maximum Working Pressure	16 Bar *
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* As the available air pressure in most mix rooms does not exceed 6 Bar it is not practical to charge the surge eliminator for use at this working pressure. (see 'set up' procedure) It is therefore recommended that 'Active Surge Eliminators' are used for working pressure above 12 Bar fluid pressure.

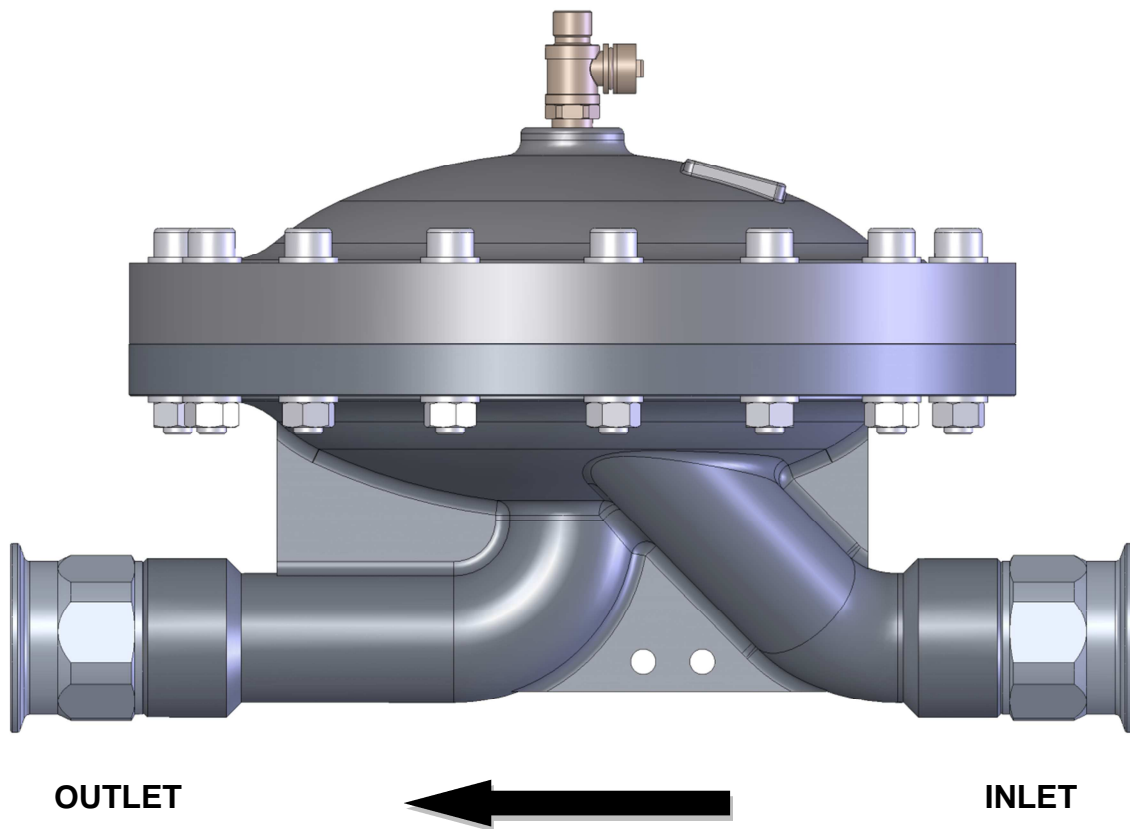
Model Selection - Section 1.4



Example: Inlet fitting 1" Sanitary: - Part Number 104052 - S

Standard – Inlet Fitting Selection Table			
SUFFIX	PART No	DESCRIPTION	REMARKS
R	192722	FITTING - M28 x 3/4" SANITARY	
S	192723	FITTING - M28 x 1" SANITARY	STANDARD
T	192724	FITTING - M28 x 3/4" NPT (FEMALE)	STANDARD
U	192725	FITTING - M28 x 3/4" BSPT (FEMALE)	STANDARD
V	192726	FITTING - M28 x 28MM COMPRESSION COUPLING	
W	192727	FITTING - M28 x 3/4" BSP (H)	

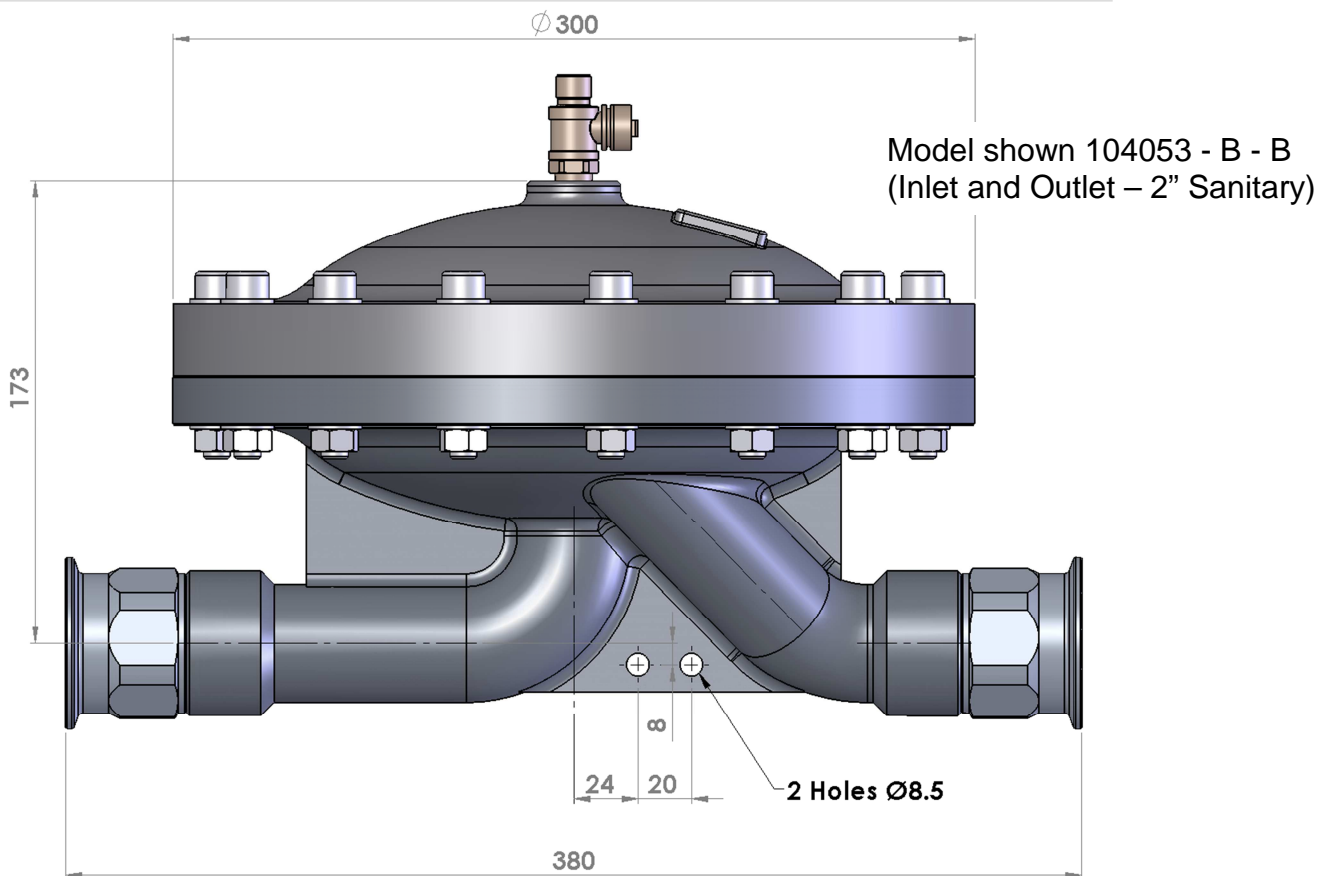
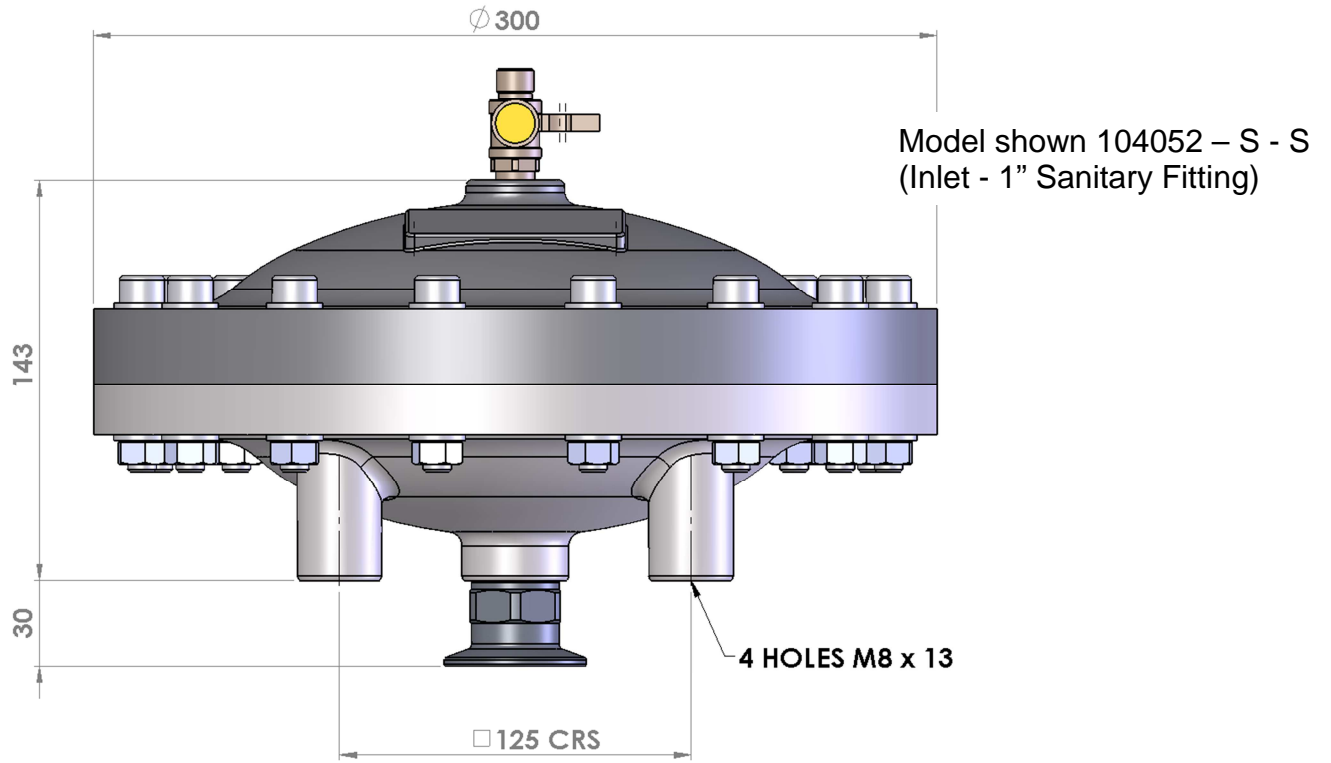
Model Selection - Section 1.5



Example: Inlet / Outlet fitting 2" Sanitary: - Part Number 104053 – B - B

Flushable - Inlet / outlet Fitting Selection Table			
SUFFIX	PART No	DESCRIPTION	REMARKS
A	192553	FITTING - M45 x SLIP FLANGE ASSEMBLY	DN 50 BS4504 PN16
B	192554	FITTING - M45 x 2" SANITARY	STANDARD
C	192555	FITTING - M45 x 1 1/2" SANITARY	STANDARD
D	192556	FITTING - M45 x 1 1/2" NPT (FEMALE)	
E	192557	FITTING - M45 x 1 1/2" BSPT (FEMALE)	
F	192558	FITTING - M45 x 42 MM COMPRESSION COUPLING	DIN 2353
G	192559	FITTING - M45 x 1 1/4" BSP (H)	
H	192560	FITTING - M45 x 1 1/2" BSP (H)	
L	192564	FITTING - M45 x 1" SANITARY	STANDARD

Installation – Section 2.1



Installation – Section 2.2

General

The surge eliminator is pressure tested with demineralised water; the fluid chamber should be flushed with suitable material prior to use.

If any circulating system pressure testing is carried out with the surge eliminator in position then the fluid pressure should not exceed 24 Bar, the upper chamber should not be charged with air.

Circulating system flushing can be carried out with the surge eliminator in position; however, the upper chamber should not be charged with compressed air.

Following pressure testing and flushing procedures, the fluid diaphragm may need replacing prior to use in production if the flushed system held contaminants that could impregnate and damage the diaphragm.

Ensure that the unit is correctly grounded to earth to prevent any 'static' build up

Mounting

To achieve the best performance from the surge elimination unit the ideal location is direct mounting on the paint pump outlet connection

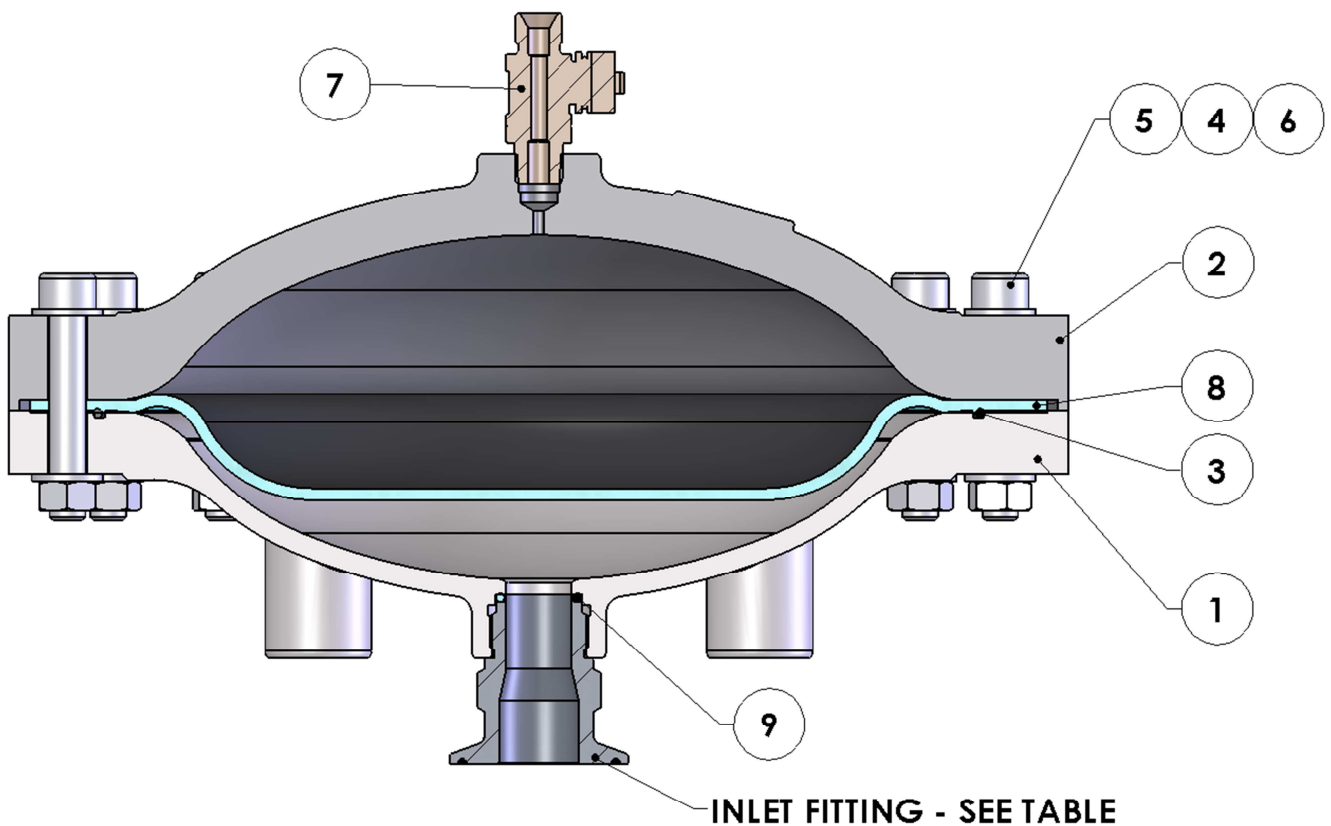
A suitable bracket should be used to support the surge eliminator in the event that the paint pump or connecting pipework is removed for maintenance operations.

Setting

1. Ensure that there is no fluid pressure in the lower chamber.
2. Supply compressed air at $\frac{1}{2}$ the desired fluid pressure + 5% through the $\frac{1}{4}$ BSP ball valve in the upper chamber.
E.g. Desired fluid 10Bar therefore, 5 Bar x 1.05 = 5.25 Bar.
(A suitable compressed air supply with an accurate pressure gauge should be used for this operation)
3. Close the $\frac{1}{4}$ BSP ball valve and remove the compressed air supply
4. Introduce fluid at the required pressure to the lower chamber. (This reduces the air volume by half and increases the air pressure by a factor of two)

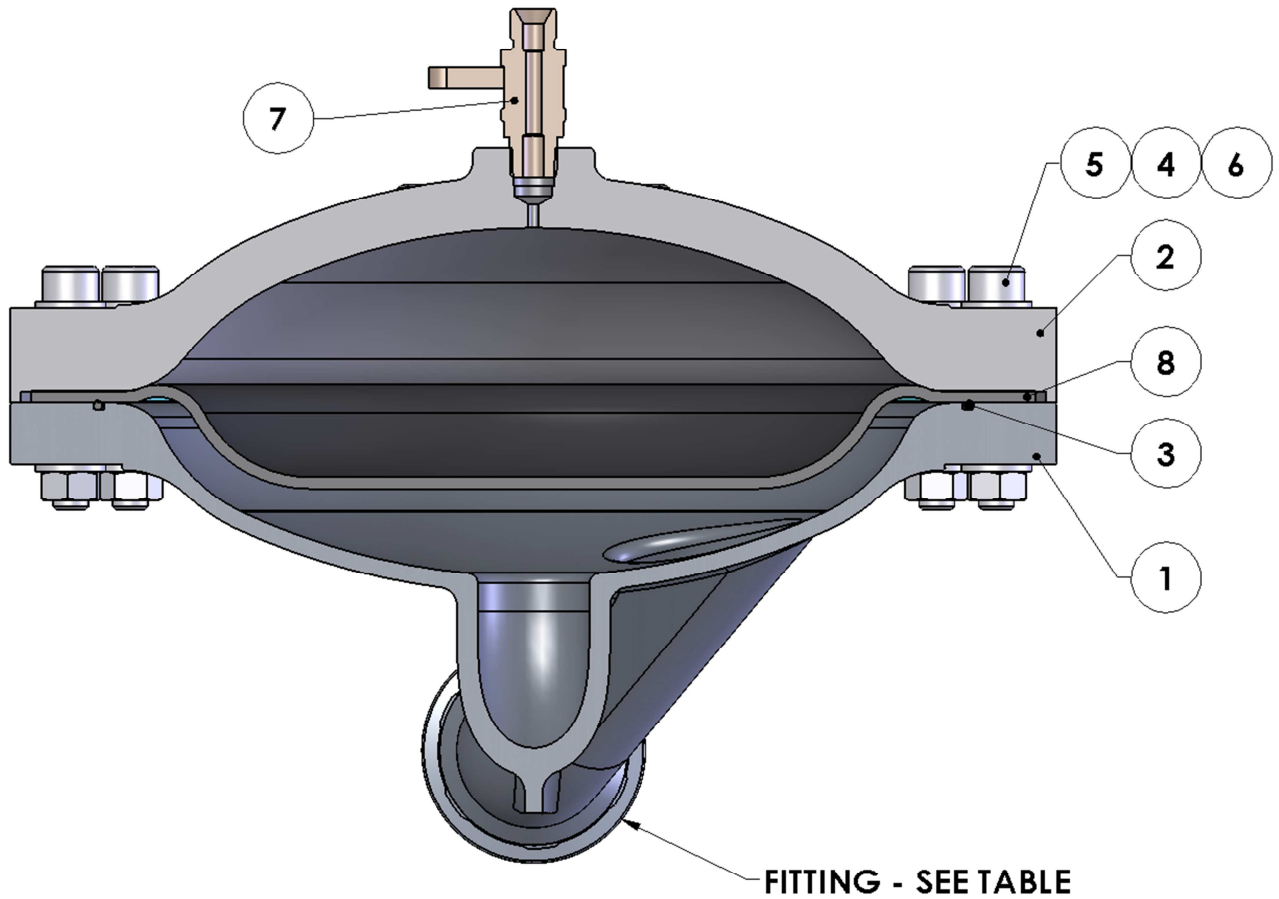
Assembly Drawing – Section 3.1

Parts List - Standard Surge Chamber 104052 - X				
ITEM	PART No	DESCRIPTION	QTY	REMARKS
1	193182	BOTTOM DISH	1	
2	193183	TOP DISH	1	
3	192232	Ø247 O-RING	1	
4	165135	M10 PLAIN WASHER (ST ST)	30	
5	165569	M10 x 60 CAP HD SCREW	15	
6	163127	M10 HEXAGON NUT	15	
7	172027	1/4" BALL VALVE	1	
8	192294	COMPOSITE DIAPHRAGM	1	
9	161982	Ø19.6 O-RING	1	
10	See Table	INLET FITTING	1	



Parts Lists – Section 3.2

Parts List - Flushable Surge Chamber 104053 - X - X				
ITEM	PART No	DESCRIPTION	QTY	REMARKS
1	204255	BOTTOM DISH	1	
2	193183	TOP DISH	1	
3	192232	Ø247 O-RING	1	
4	165135	M10 PLAIN WASHER (ST ST)	30	
5	165569	M10 x 60 CAP HD SCREW	15	
6	163127	M10 HEXAGON NUT	15	
7	172027	1/4" BALL VALVE	1	
8	192294	COMPOSITE DIAPHRAGM	1	
9	161981	Ø19.6 O-RING	2	
10	See Table	INLET FITTING	2	



Assembly Procedure – Section 3.3

Top Dish

1. Fit ¼ BSP ball valve (172027) into the top dish (Apply a suitable quantity of Loctite 572 thread sealant to the thread)
2. Fit Protective cap (171627) to ball valve (Transportation protection)

Main Assembly

1. Place O-ring (192232) into the groove in the bottom dish.
2. Place the composite diaphragm (192294) onto the bottom dish flange; ensure that the P.T.F.E side is facing downwards, fluid chamber side.
3. Position the top dish onto the bottom dish; ensure that all holes in the flanges are correctly aligned.
4. Insert 15 off M10 Cap screws (165569) using washers (165135) top and bottom and tighten using Hexagon nuts (163127).
5. Tighten opposed bolts to 35 N-M (25 foot-pounds) in stages to maintain an even clamping force.

Important Information - Section 4.1

Directions for Working Safety

This Product has been constructed according to advanced technological standards and is operationally reliable. Damage may, however, result if it is used incorrectly by untrained persons or used for purposes other than those for which it was constructed.

The locally current regulations for safety and prevention of accidents are valid for the operation of this product under all circumstances.

International, national and company safety regulations are to be observed for the installation and operation of this product, as well as the procedures involved in maintenance, repairs and cleaning.

These instructions are intended to be read, understood and observed in all points by those responsible for this product. These operating and maintenance instructions are intended to ensure trouble free operation. Therefore, it is recommended to read these instructions carefully before start-up. Binks cannot be held responsible for damage or malfunctions resulting from the non-observance of the operating instructions. These instructions including regulations and technical drawings may not be copied, distributed, used for commercial purposes or given to others either in full or in part without the consent of Binks.

We reserve the right to alter drawings and specifications necessary for the technical improvement of this product without notice.

High Pressure/Electrostatic Warning

High pressure equipment can be dangerous if used incorrectly, serious bodily injury may occur if the following instructions are ignored. Installation and maintenance should only be carried out by suitably qualified personnel.

1. Before attempting any work on a high-pressure system ensure material pump, hydraulics, compressed air motor are isolated where relevant.
2. Relieve all pressure from the system. Note: It is possible for pressure to get locked into a system, therefore ensure all sections of the system are checked thoroughly for remaining pressure.
3. Take care when releasing fittings
4. Always replace worn hoses immediately
5. Never plug a leak with your finger, adhesive tape or other stop gap devices
6. Always ensure equipment is suitably earthed before running, to avoid any chance of electrostatic build up.

Maintenance – Section 4.2

Operational maintenance

A periodic check should be made to ensure that the initial ‘set up’ performance is maintained.

This can be done by observing the paint system pressure gauge for fluctuations in pressure.

Note: It is not sufficient to connect a pressure gauge to the top dish and check this pressure as this does not indicate the diaphragm position and thus that the correct air volume for damping is available.

Preventative Maintenance

As the unit usually operates continually for 24 hours per day with the paint circulating system it is recommended to replace the diaphragm on a yearly basis.

Note: Before attempting any maintenance ensure that all relevant directions for working safety are followed.

Fault Finding – Section 4.3

Problem	Cause	Action
Paint pressure pulsating	Insufficient or lack of air pressure / volume in the upper chamber	Recharge the upper chamber to the correct air pressure and volume (see page 9)
Paint pressure pulsating	Diaphragm failure	Dismantle and replace the defective diaphragm

Spare Parts List – Section 4.4

25 05 76 Diaphragm Replacement Kit for Standard Unit 104052 & Flushable Unit 104053				
Item	Part No.	Description	Qty	Remarks
8	192294	Moulded Composite Diaphragm	1	
3	192232	Ø 247 O-Ring	1	

Accessories – Section 5.1

Accessories		
Part No.	Description	Remarks
250508	Air Charging Kit	All Models
207969	Surge Eliminator Support Stand	For 104053
192027	Surge Eliminator Tube Clamp (2off)	
192544	2" Sanitary Clamp	
192029	2" Sanitary Gasket	
192009	1½" Sanitary Clamp	
192008	1" Sanitary Gasket	



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