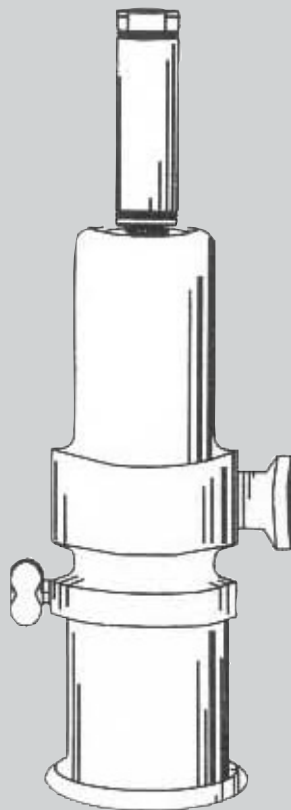


Service Manual

GHVB Vacuum Breaker



Thank you for purchasing an Alfa Laval product.

This manual has been provided to instruct you how to operate and service this product correctly and safely. Be sure to follow all directions and instructions; failure to do so could result in personal injury or equipment damage.

This manual should be considered part of this product and should remain with it at all times for reference. (If you sell it, please be sure to include this manual with it).

Warranty is provided as part of Alfa Laval's commitment to our customers who operate and maintain their equipment as this manual dictates. Failure to do so may result in loss of warranty.

Where defects appear on the product during the warranty period. Alfa Laval will back the product and correct the problem. Should the equipment be modified or not kept in the manner prescribed within this manual, the warranty will become null and void.

This manual is divided into main sections - See below

Safety	1. Important Information.	2
	2. Warning Signs	3
	3. Safety Precautions.. . . .	3
Installation	1. Unpacking/Delivery	4
	2. General Installation	5
	3. Important Installation Information.	6
Operation	1. Operation	7
	2. Trouble-shooting	8
	3. Recommended Cleaning	9
Maintenance	1. General Maintenance.	10
	Ordering Spare Parts	11
	2. Disassembly of Vacuum Breaker	12
	3. Assembly of Vacuum Breaker	13
Technical Data	1. Technical Data	14
Drawings/Parts List	1. Drawing/Parts List	15
	2. Exploded View	16
Information	1. Notes.. . . .	17
	2. User Feedback.. . . .	17

Throughout each of Alfa Laval's instruction manuals, certain safety signal words and symbols will appear. These are in the form of warnings, caution or note.

WARNING!: Indicated that special procedures **MUST** be followed to avoid severe personal injury.

CAUTION!: Indicates that special procedures **MUST** be followed to avoid damage to the equipment.

NOTE!: Denotes action or procedures to follow for optimum, safe use of product.

Follow Safety Directions

Read this manual thoroughly before working on equipment.

Leave all safety stickers on equipment and keep them maintained in legible condition. In the event that stickers become damaged or are missing, contact Alfa Laval for replacements.

Maintain equipment in good working condition.

Do Not Make Machine Modifications

Alfa Laval offers a full range of products to suite all your needs. Therefore, product modifications is never necessary.

Keep Maintenance Safe

Replace damaged or worn parts immediately. Never allow old product, debris, or any lubricants to build up on equipment. Never operate unless equipment is in proper working order.

Before attempting to service the machine, disconnect all power and compressed air. Allow machine to come to a complete stop. Never service a machine while it is operating. Keep all limbs away from moving equipment. Be sure that product pressure has been relieved before beginning maintenance.

All warnings in this manual are summarized on this page.

Pay special attention to the instructions below so that severe personal injury or damage to the valve are avoided.

3. Safety Precautions

Installation

- : -Always observe technical data
- : -Avoid damaging the vacuum breaker
- : -Never touch coupling when compressed air is supplied to the actuator

Operation

- : -Always observe the technical data
- : -Never touch a valve or pipeline while hot
- : -Always handle lye and acid with great care
- : -Always use rubber gloves
- : -Always wear protective goggles!

Maintenance

- : -Always observe the technical data
- : -Never service a valve while it is hot
- : -Never service a valve while it or the pipelines are pressurized
- : -Always release compressed air after use
- : -Never stick fingers through the ports if compressed air is supplied to the actuator

This instruction manual is part of the delivery. Please read the instructions carefully. For additional details, please refer to the drawings and parts list on page 15.

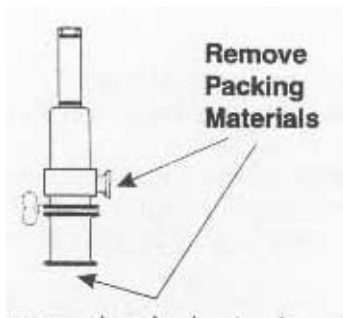
1. Unpacking/Delivery

1

Check the delivery:

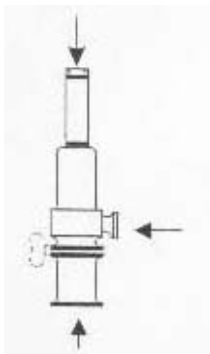
1. Complete Vacuum Breaker (See 2)
2. Packing list
3. Instruction Manual

3



1. Clean the vacuum breaker/parts of possible packing materials
2. Clean the actuator

5



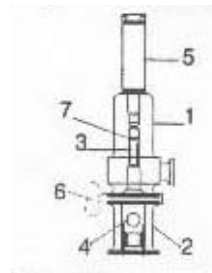
CAUTION

1. Avoid damaging the vacuum breaker/parts
2. Avoid damaging the handle or actuator

4

2

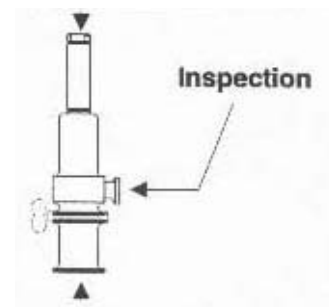
Separate parts for welding



Standard delivery of vacuum breaker parts:

- | | |
|------------------------|-----------------------|
| 1. Vacuum breaker body | 5. Air Cylinder |
| 2. Vacuum Breaker base | 6. Clamp |
| 3. Plunger | 7. O-ring (2 pcs) |
| 4. Ball | 8. Gasket (not shown) |

4



1. Inspect the vacuum breaker for visible transport damages
2. Inspect the actuator

2. General Installation

1

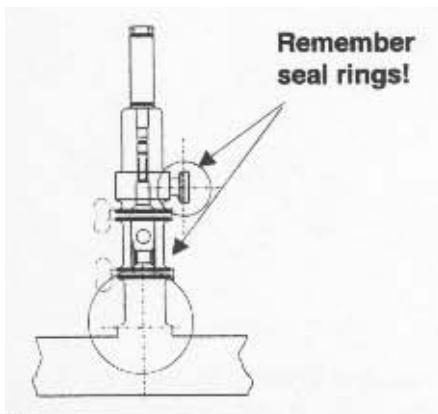
CAUTION

- Always observe the technical data (see page 14)
- Always release compressed air after use.
- Never touch the coupling between the vacuum breaker body and the actuator if compressed air is supplied to the actuator.

NOTE

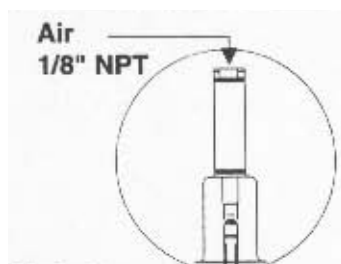
Alfa Laval cannot be held responsible for incorrect installation

3



Fittings:
Ensure that the connections are tight.

5



Air connection of actuator:
(Air used only to pulse valve during C.I.P.)

2

CAUTION

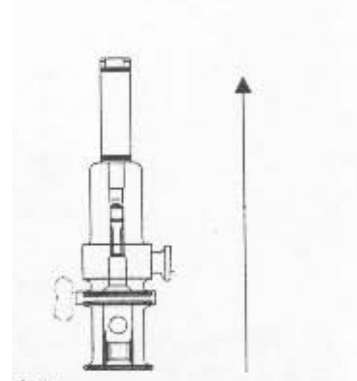


Avoid stressing the vacuum breaker.

Pay special attention to:

- vibrations
- thermal lube expansion
- excessive welding
- pipeline overload

4



Position of Actuator:

Position the vacuum breaker vertically with the actuator on top

Read the instructions carefully and pay special attention to the warnings.

The installation variation below is **only a suggestion**. It is important that you contact your local regulatory agency for acceptance of your installation.

3. Important Installation Information

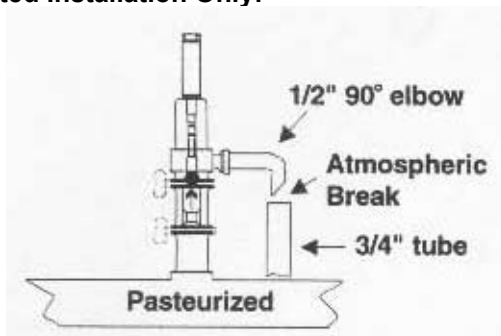
1

NOTE

When installing C.I.P. drain pipe on the Vacuum Breaker discharge port, ensure that an atmospheric break exists no lower than the lowest point of the Vacuum Breaker. Ensure that the Vacuum Breaker is situated 12" above the highest point of the raw product pipeline on the pasteurized side. See illustration in 2.

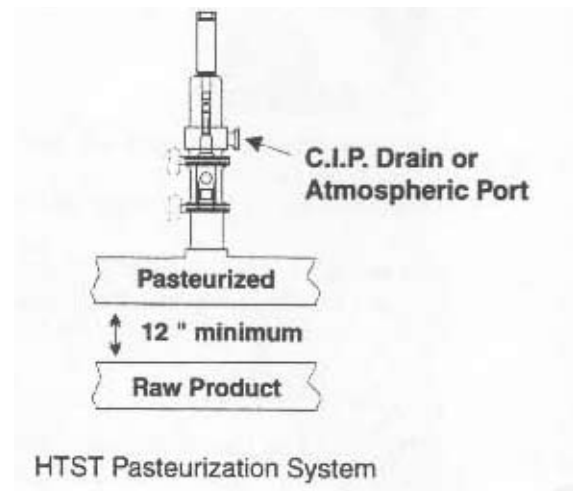
3

Suggested Installation Only:



During product process, port acts as an atmospheric break in case of power loss/failure. During C.I.P., the port acts as a C.I.P. drain port.

2



4

NOTE

It is important to verify acceptance of your installation with your local regulatory agency. If you need assistance, contact Alfa Laval.

Read the instructions carefully and pay special attention to the warnings.

The vacuum breaker is automatically operated by means of an actuator.

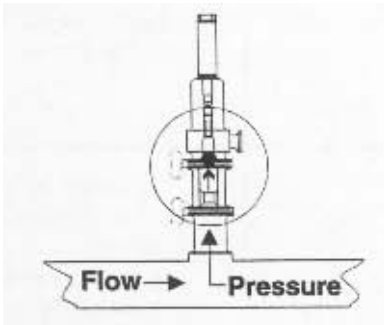
1. Operation

1

NOTE

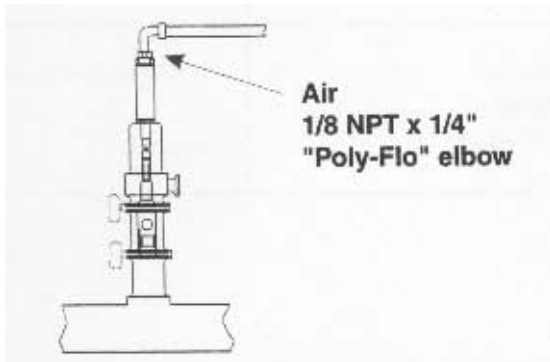
Always observe the technical data (see page 14)
Alfa Laval cannot be held responsible for incorrect operation.

3



When pipelines are pressurized, the internal ball is forced upward, closing the port.

5



Operation by means of actuator: (C.I.P. only)

Automatic on/off operation by means of compressed air for pulsing the actuator during the C.I.P.

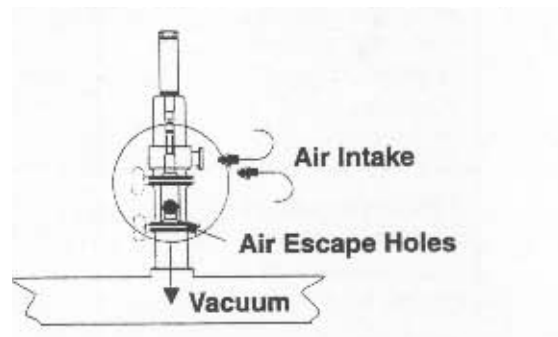
2

Caution



Never touch the vacuum breaker or the pipelines when processing hot liquid or when sterilizing.

4



When internal pressure drops, the ball is drawn down, allowing air to enter and relieve the vacuum.

2. Trouble-Shooting

NOTE

Read the maintenance instructions carefully before attempting to replace worn parts. See page 11.

Problem	Cause/Result	Repair
- External leakage - Internal leakage by closed valve (normal wear)	- Worn seal ring/o-ring - Worn ball	Replace the seal ring, o-rings and ball
- External leakage - Internal leakage by closed valve (too early)	- High pressure - High temperature - Aggressive liquids - Many activations	- Replace by a seal ring of a different rubber grade - Change the operation conditions
Difficult to open/close	- Worn o-rings - Worn plunger	Replace o-rings Replace plunger
Difficult to open/close	- Worn actuator - Dirt penetration into the actuator	Replace actuator

The vacuum breaker is designed for cleaning in place. CIP = Cleaning in Place.
 Read the instructions carefully and pay special attention to the warnings!

NaOH = Caustic Soda

HNO_3 = Nitric Acid

1. Recommended Cleaning

1

WARNING CAUSTIC DANGER!

Always handle lye and acid with great care!

Always use rubber gloves!

Always wear protective goggles!

NOTE

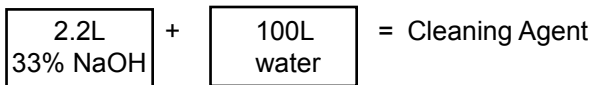
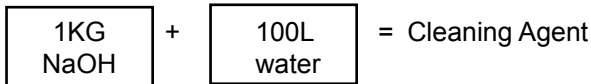
The cleaning agents must be stored or discharged in accordance with regulations.

3

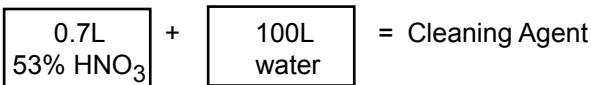
Examples of cleaning agents:

Use clean water, free from chlorides.

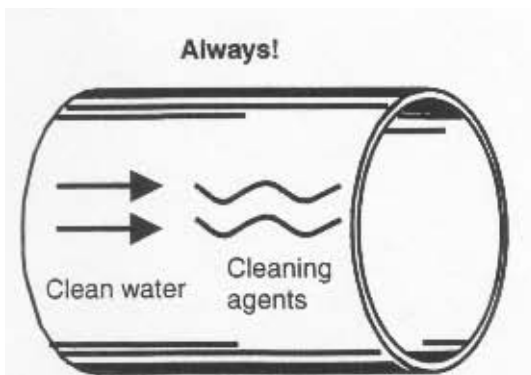
1.1% by weight NaOH at 158°F (70°C).



2.0.5% by weight HNO_3 at 158°F (70°C).



5



2

Caution



Never touch the vacuum breaker or the pipelines when processing hot liquid or when sterilizing.

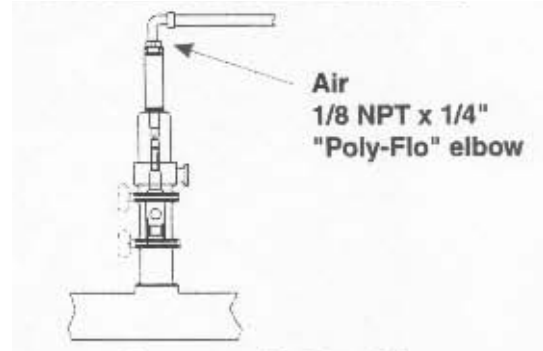
4

1. Avoid excessive concentration of the cleaning agent
Dose Gradually!
2. Adjust the cleaning flow to the process

Milk sterilization/viscous liquids

Increase the cleaning flow!

6



Operation by means of actuator: (C.I.P. only)

Automatic on/off operation by means of compressed air for pulsing the actuator during C.I.P.

Maintain the vacuum breaker carefully. Read the instructions carefully and pay attention to the warnings!

1. General Maintenance

1

NOTE

Always observe the technical data (see page 13)

Always release compressed air after use.

NOTE

All scrap must be stored or discharged in accordance with regulations.

3

CAUTION

Never stick your fingers through the ports if compressed air is supplied to the actuator.

2



The vacuum breaker must never be serviced while hot.

The vacuum breaker and pipelines must never be serviced while pressurized.

Maintain the vacuum breaker carefully. Read the instructions carefully and pay attention to the warnings!

1. General Maintenance

Ordering Spare Parts

Order from Alfa Laval's spare parts list.

	Valve Seal Ring	Actuator
Preventative Maintenance	Replace after 12 months	Replace after 24 months
Maintenance After Leakage (Leakage normally starts slowly)	Replace same day after leakage occurs	Replace same day after leakage
Planned Maintenance	Regular inspection for leakage and smooth operation Keep a record of the valve Use the statistics for planning the inspections. Replace after leakage	Regular inspection for leakage and smooth operation Keep a record of the valve Use the statistics for planning the inspections Replace when required
Lubrication	Before Fitting Use approved lubricants only!	

Read the instructions carefully. The items refer to the drawings and parts list on page 15. Handle scrap in accordance with regulations.

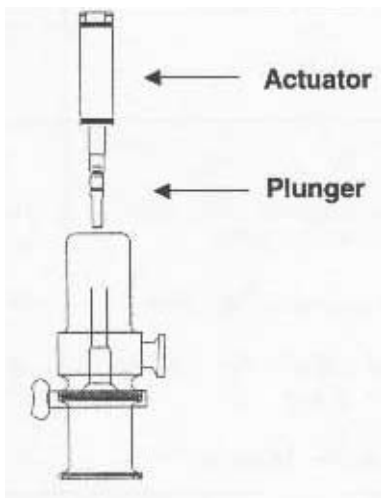
1. Disassembly of GHVB

1

NOTE

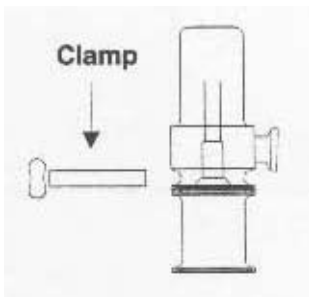
Always observe the technical data (see page 14).
Always release compressed air before dismantling.

3



1. Remove actuator and plunger
2. Remove plunger from actuator

5



1. Remove clamp from base/body

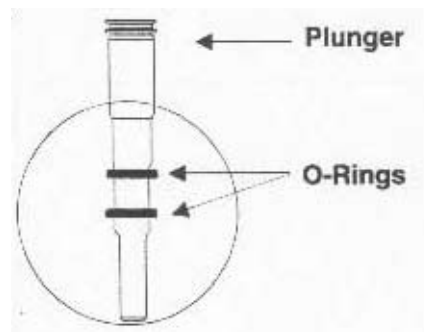
2

Caution



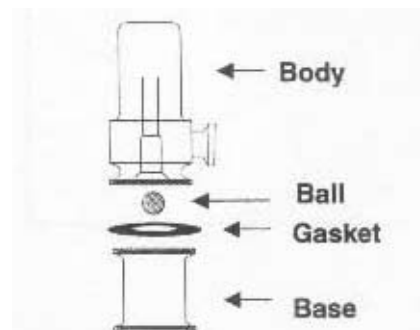
The vacuum breaker must never be serviced while hot.
The vacuum breaker and the pipelines must never be serviced while pressurized.

4



1. Remove O-Rings

6



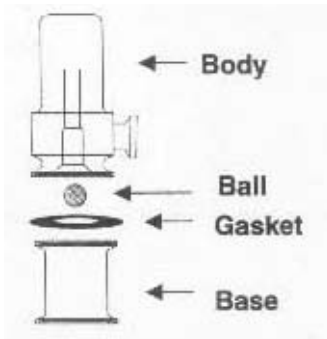
1. Remove body ball and gasket from base.

Read the instructions carefully. The items refer to the drawings and parts list on page 15.

Handle scrap in accordance with regulations.

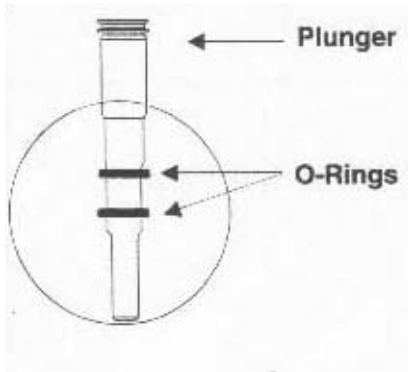
2. Assembly of GHVB

1



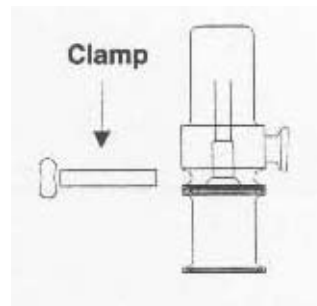
1. Assemble ball, gasket and body to the base.

3



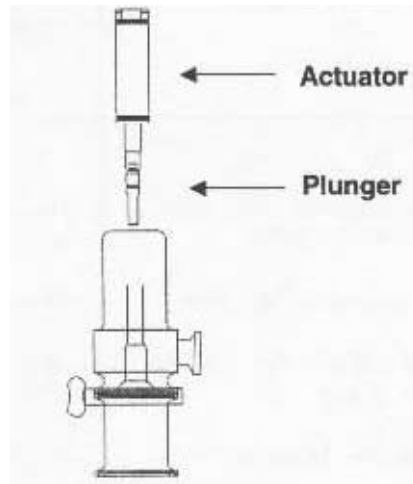
1. Apply USDA grade lubricant to O-Rings
2. Assemble O-Rings to plunger
3. Assemble plunger to actuator

2



1. Assemble the clamp and tighten

4



1. Assemble actuator and plunger to body.

It is important to observe technical data during installation, operation and maintenance.

Inform service personnel about the technical data.

1. Technical Data

Valve - Data

Max. Product Pressure	145 PSI 910bar)
Min. Product Pressure	Full Vacuum
Temperature Range.....	14°F to 203°F (-10° to 95°C)

Valve - Material

Product Wetted Steel Parts	AISI 316L
Rubber Grades	EPDM, Nitrile or Fluorinated Rubber (FPM)
Ball	Delrin
Finish	Polished

Actuator-Data

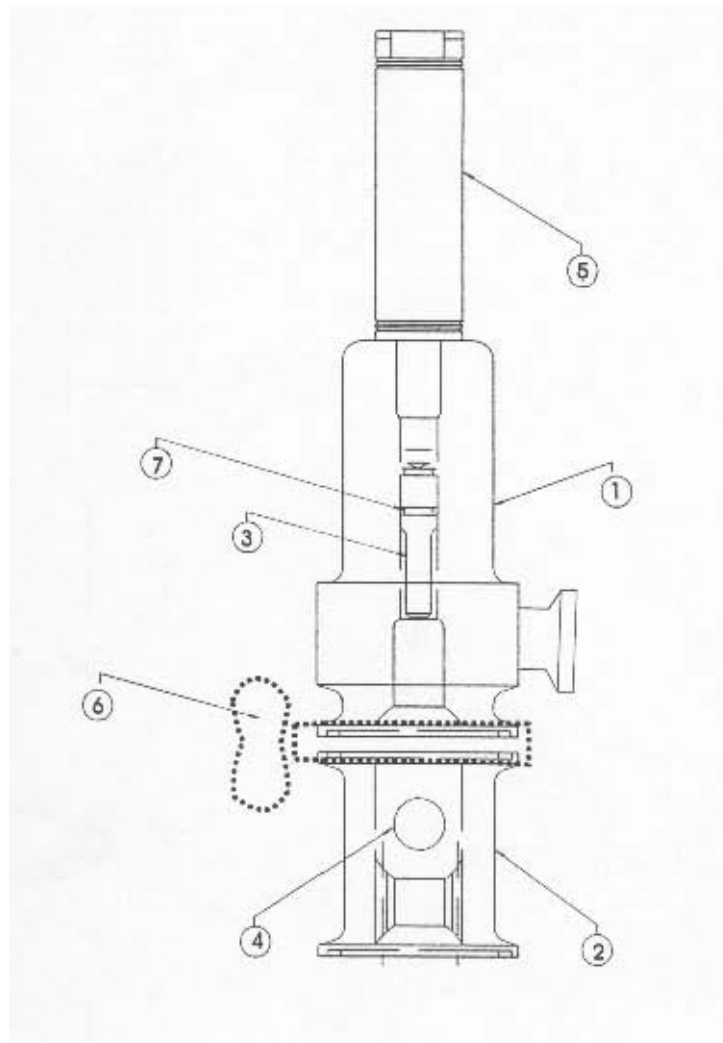
Max. Air Pressure	100 PSI (7bar)
Min. Air Pressure	40 PSI (2.8bar)
Temperature Range.....	-13°F to 195°F (-25° to 90°C)

Actuator - Materials

Actuator Body	AISI 304/Aluminum
Finish	Semi-bright

The drawings and the parts list include all items

Item	Qty.	Description
1	1	Vacuum Breaker Body
2	1	Vacuum Breaker Base
3	1	Plunger
4	1	Ball
5	1	Air Cylinder
6	1	1½" Clamp
7	2	O-Rings
8	1	Gasket (not shown)



This page shows an exploded drawing of the GHVB Vacuum Breaker

Item	Description
1	Air Cylinder
2	Plunger
3	O-Rings
4	Body
5	Delrin Ball
6	Gasket
7	Base
8	Clamp

