

INSTALLATION, OPERATION AND MAINTENANCE MANUAL

2-way modulating pneumatic valve



Ref. GENE BRE: 5065 – 5065A

Installation, Operation and Maintenance Instructions

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1. Product Description.

1.1) General

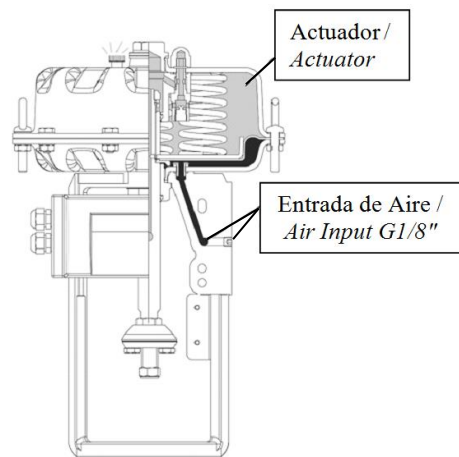
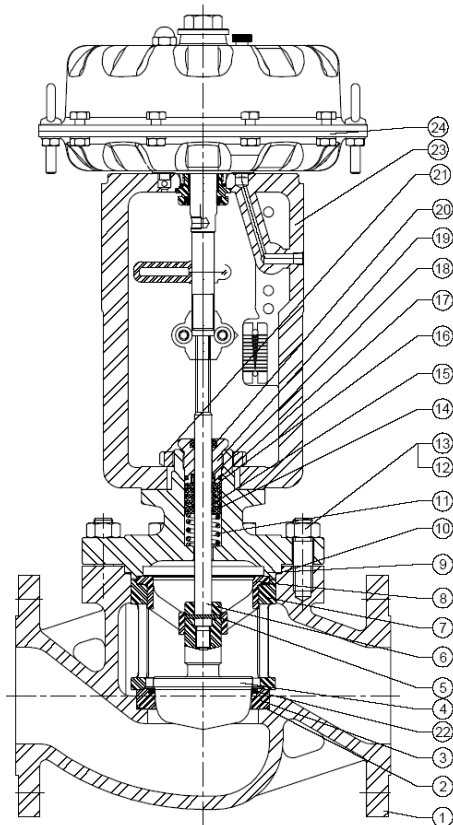
Genebre, S.A. provides an extensive range of valves that have been designed and built for the management and control of fluids in industrial processes.

The compatibility of the materials from which these valves are manufactured (see the corresponding technical sheets) and their application in different industrial processes is the responsibility of the user. The valves will operate at optimum levels provided the working conditions do not exceed the pressure and temperature limits (pressure curve) for which they are designed. Consult the product technical sheet or contact GENEBRE, S.A. for further information.

1.2 Principle of operation

The 2-way modulating pneumatic valve consists of a single seat globe valve piloted by a simple effect pneumatic actuator (supplied in Normally Closed fail safe position). The position of the valve plug is regulated by the pressure of the air signal on the membrane of the actuator. The globe valve can also be used as a cut-off valve (seal).

1.3) Assembly drawing



1.4) Parts list

No.	Name	Material	Surface treatment	Kit Ref.
1	Body	ASTM A216 WCB	Epoxy paint	-----
2*	Seat Gasket	Graphite + S.Steel	-----	K5065
3*	Seat support	S.S. 304	-----	K5065
4*	Plug	S.S. 304	-----	K5065
5*	Pin	S.S. 304	-----	K5065
6*	Stem	S.S. 304	-----	K5065
7	Cage	S.S. 304	-----	-----
8	Guide Sleeve	S.S. 304	-----	-----
9	Bonnet	ASTM A216 WCB	Epoxy paint	-----
10*	Body Gasket	Graphite + S.Steel	-----	A5065 E5065 K5065
11	Spring	AISI 304	-----	-----
12	Stud Bolt	Carbon Steel	Zinc Plated	-----
13	Nut	Carbon Steel	Zinc Plated	-----
14*	Packing	Graphite	-----	E5065
15*	Packing	Graphite	-----	E5065
16*	Packing	Graphite	-----	E5065
17*	O-ring	VITON	-----	E5065
18*	Sealing ring	VITON	-----	E5065
19	Packing nut	2Cr13	-----	-----
20*	Sealing ring	VITON	-----	E5065
21	Nut	Carbon Steel	-----	-----
22*	Seat	PPL	-----	A5065
23	Yoke	Carbon Steel	Epoxy paint /	-----
24	Actuator	Carbon Steel	Epoxy paint	-----

** REPAIR KIT PARTS*

Genebre, S.A. can also provide spares for the diaphragm and springs for the actuator. Please consult for details.

2. Transport and Storage Conditions



The transport and storage of this type of product must be performed in its original packaging!

VISUAL INSPECTION

Check that the products have not been damaged during transportation, unloading and placement on site.

During storage it is recommended that the protective packaging not be removed to prevent any blows or the accumulation of dirt in the interior of the valve. This packaging should not be removed unless the valve is going to be installed.

Where possible, the valves must be stored in a dry clean place.



If during any anomaly is noticed during the observance of these guidelines for receipt , contact GENE BRE urgently in order to resolve the liability for these anomalies.

IMPORTANT NOTE:

Before installing and/or handling these elements, CAREFULLY READ these instructions for use and OBSERVE all information contained herein. In the event of not understanding any of this information, please contact GENE BRE, S.A.



The responsibility for the safe use of these products is that of the user in accordance with the contents of these instructions for use as well as the specific technical documentation of the device supplied.

3. Installation Instructions

3.1) Preparation

Remove any remains of packing material from the valve.

Significant problems may arise with any valve installed onto dirty piping. Ensure that the pipe is free from dirt, welding particles, etc, prior to installation as the valve may suffer irreparable damage during the start-up of the equipment → *prepare a clean working area*. Make sure there is sufficient space for future maintenance operations.

Monitor the correct functioning of the equipment in both directions of open and close, whilst observing the correct movement of the valve plug element. If this is not the case, check that there are no foreign bodies in the interior of the valve and repeat the operation.

The actuator is supplied in the "Normally Closed" fail safe position. If the "Normally Open" fail safe position is required, please contact Genebre, S.A.

3.2) Assembly

Install the control valve on a horizontal, accessible stretch of piping, with the arrow marked on the valve body facing the same direction as the flow of fluid.

Do not dismantle these valves in order to install them.

Use the eye bolts on the actuator to suspend the equipment in the air.

Ensure that the flanges on the piping as well as the ends of the valve are clean. Use the corresponding bolts and bolt holes for this purpose on the flanges.

Place an appropriate seal on each end and centre it between the flanges.

Tighten the bolts uniformly in a criss-cross pattern to avoid any deformation. Under no circumstances force the piping in order to centre the valve, this must freely move into place. Finally, verify that the bolts are all tightened with the recommended torque for each bolt size.

Ensure that the flange seals are all correctly seated.

After assembly, check the tightness and operation of the valve. The air pressure supplied to the actuator must be within the range of 4 bar (minimum) to 6 bar (maximum).

It is highly recommendable that the valve is installed on horizontal piping and preferably with the actuator at the top. Otherwise, the equipment may not function properly (variation in the flow rate curve, vibrations, noise, premature wear and tear of the parts, lack of tightness between the flanges, etc.). Use adequate supports where required.

The valves must not support any potential stresses from the piping, therefore it is advisable to ensure they are properly aligned and parallel to the piping.

The use of filters on the piping is recommended to prolong the useful life of the valves.

When installing the valve on a steam system, it is recommended to fit a purger immediately upstream to ensure the drainage of the piping when the valve is closed, thereby preventing damage caused by the water-hammer effect.

Install arrester valves and gauges (where necessary) at the inlet and outlet of the equipment checking and calibration purposes as well as maintenance operations. Optionally, a "bypass" can be installed around the equipment for temporary use in the event of an emergency.

4. Operating Instructions

4.1) Use

The valves provide a tight seal when used in accordance with the pressure / temperature values for which they have been designed.

The materials from which the valves are made must be compatible with the fluid circulating through the valve, otherwise the valve may become seriously damaged.

Do not use this type of valve with fluids that could contain solids as this may damage the seal of the valve rendering it useless.

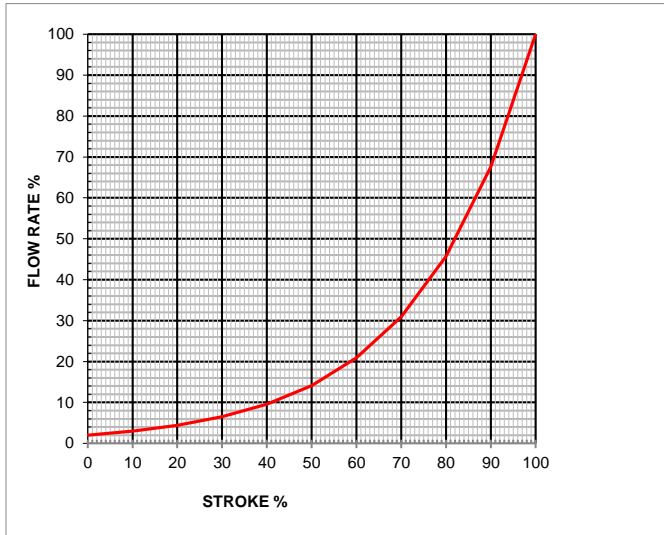
4.2) Operation

In the case of installation of a positioner, carefully read the instructions for use of said device. Genebre can supply the supports and couplings for the joint assembly of the two. Consult if necessary.

If there is no element regulating the air inlet signal 3~ 15 psi or 4-20 mA, the valve will function as ON-OFF. Supply air to the actuator at 4-6 bar to open. Either of the two air inlets can be used (see point 1.3). Interrupt the air to close (spring return).

It must be considered that when regulating the fluid flow rate, the valve is equipped with an **equal percentage** type plug, in which each increase of the stroke of the plug produces a change in the flow rate which is proportional to the flow rate prior to the variation.

The following graph shows the relationship between the position of the plug and the circulating flow.



Measurement	Kv (m ³ /h)
3/4"	6.3
1"	10.0
1 1/4"	16.0
1 1/2"	25.0
2"	40.0
2 1/2"	63.0
3"	100.0
4"	160.0

Stroke (%)	0	10	20	30	40	50	60	70	80	90	100
Flow rate (%)	2	3	4.37	6.5	9.6	14.1	20.9	30.9	45.7	67.6	100

Example:

Nominal Size: 2"

Kv = 40 m³/h

Valve open at 50%: Flow rate 14.1 % of 40 = 5.64 m³/h

5. Maintenance Instructions

The maintenance frequency, place and method will be defined by the user, bearing in mind the use of this product. However, where necessary, the following checks will aid in prolonging the useful life of the valve and reduce problems on the installation.

The valves must not be left in the open or closed position for extended periods of time. It is recommended, whenever the process allows, to operate the valve at least once every six months.

5.1) Stem leakage

Retighten the stem packing gasket by screwing the *packing nut* (part.19). If the leak persists, the valve must be disassembly to replace the packings (part.14/15/16) and/or the *O-rings* (part.17/18/20).

See repair instructions.

5.2) Body gasket leakage

Check that the *nuts* and *stud bolts* on the body (part.12,13) are tight. If loose, adjust to the recommended torques (NOTE: the adjustment of these bolts must be performed at ambient temperature). If the leakage persists, it is probably due to the *body gasket* (part. 10) or the seal surface has been damaged and will require dismantling to carry out any repair.

See repair instructions.

5.3) Leakage in the line (due to the seat)

Check that the valve is completely closed. If this is the case, the leakage is due to the *seat* (part.22), the *seat support* (part.2/3) and/or the *plug* (part.4) being damaged. In this case the valve will require disassembly to carry out any repair.

See repair instructions.

5.4) The actuator is not responding correctly

It is possible that the actuator diaphragm or one or more of the springs are damaged. Genebre, S.A. can supply spares for both components. Please consult for details.

6. Repair Instructions



Prior to removing the valve from the piping, ensure that the line has been closed and depressurised as poor handling could result in serious accident to people as well as severe damage to the installation. Shut off any air supply.

6.1.) Disassembly

In order to carry out repair work, it is not necessary to remove the valve from the installation.

Prepare a clean work area and the appropriate tools for the mechanical tasks.

a.- Release and remove the *nuts* (part. 13) from the *stud bolts* (part. 12) and remove the actuator, the yoke, bonnet, the stem, the guide and the plug in one piece.

b.- If access is required to the *seat* (part. 22), first remove the *cage* (part. 7).

c.- In order to access the gasket area, it is first necessary to remove the *pin* (part. 5), unscrew the *plug* (part. 4) and remove the guide (part. 8) as well as the lower part of the *stem* (part. 6). Unscrew the *packing nut* (part. 19).

Once the whole valve has been disassembled, the condition of each of the parts can be verified. Any part that is going to be reused must be completely cleaned and stored in a safe and clean atmosphere.

All the surfaces of the seal in the plug, seat, gaskets and faces must be checked for signs of corrosion, erosion and metallic incrustations on the seat and frame. In the event of any damage or uncertainty, these parts must be replaced. It is recommended to replace the body gasket (part. 10) during each maintenance operation.

e.- The cleaning of the parts of the valve must be performed using an appropriate degreasing agent. Care must be taken with the sealing surfaces of the plug, the sealing faces of the ends and gasket seating, as when damaged, this may affect the performance of the valve.

6.2) Reassembly

Before reassembling the valve, ensure that the repair kit and/or the parts to be used are appropriate and are the originals from the factory.

When the valve is reset, cleaning is essential for a long useful life of the valve.

- a.- Insert the *spring* (part.11) and the graphite *packings* (part.14/15/16) into the *bonnet* seating (part.9). Screw the packing nut without pressing the packing.
- b.- Insert the lower part of the *stem* (part.6) through the bonnet and join it to the upper part of the stem using the two screws.
- c.- Fit the *guide* (part.8) and the *plug* (part.4) to the end of the stem using the *pin* (part. 5).
- d.- Place the *gasket* (part.2), the *seat support* (part.3) and the *seat* (part.22) in the seating area. Place the *cage* (part.7) on top.
- e.- Replace the *body gasket* (part.10) and fit the bonnet-yoke-actuator assembly on top of the body. Join using the *stud bolts* (part.12) and the *nuts* (part.13).

WARNING: it is advisable to tighten the nuts using the criss-cross method and with the valve open (with an air supply in valve Normally Closed position). Otherwise this may deform the seating.

7) Health and Safety

7.1) The fluids that pass through a valve can be corrosive, toxic, flammable or of a contaminating nature. When handling the valves, take the necessary safety measures and it is advisable to use personal protective equipment:

- 1) Wear eye protection.
- 2) Wear appropriate gloves and work clothes.
- 3) Wear safety shoes.
- 4) Wear a helmet.
- 5) Check the availability of running water.
- 6) In the case of flammable fluids, ensure that the appropriate extinguisher is available.

7.2) Before removing a valve from any piping, always ensure that the line is completely drained and depressurised.

7.3) Always manipulate the valve in the open position to ensure that there is no pressure in the interior cavity.

7.4) Any valve that has been used in toxic services must have a certificate of cleaning before it is handled.