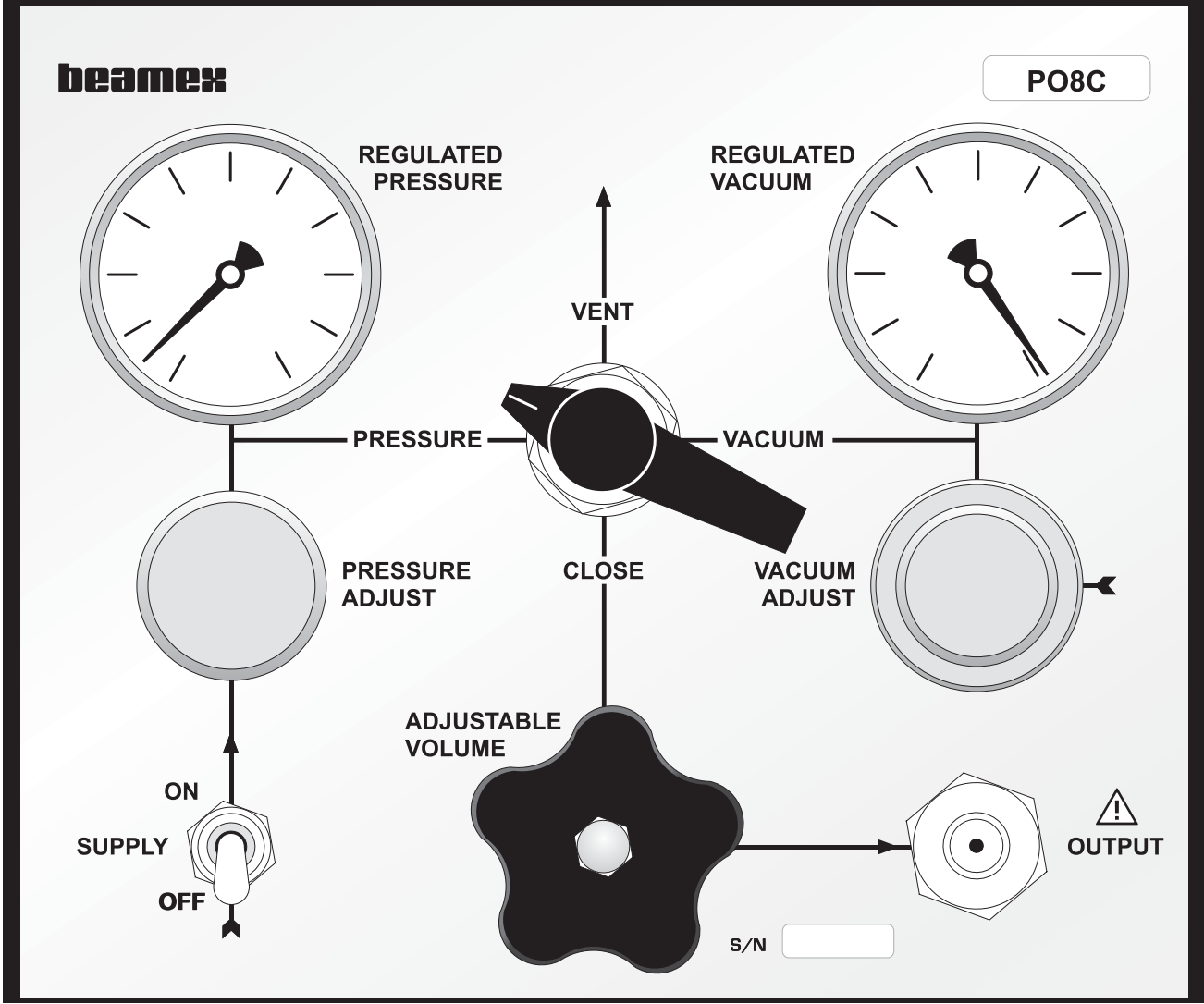


PO8C User Guide

Addendum to MCS100 User Guide



PO8C User Guide

Addendum to MCS100 User Guide

Dear user,

We have made every effort to ensure the accuracy of the contents of this manual. Should any errors be detected, we would greatly appreciate to receive suggestions to improve the quality of the contents of this manual.

The above notwithstanding, we can assume no responsibility for any errors in this manual or their eventual consequences.

We reserve rights to make modifications to this manual without any further notice.

For more detailed technical data about PO8C, please refer to MCS100 User Guide or contact the manufacturer.

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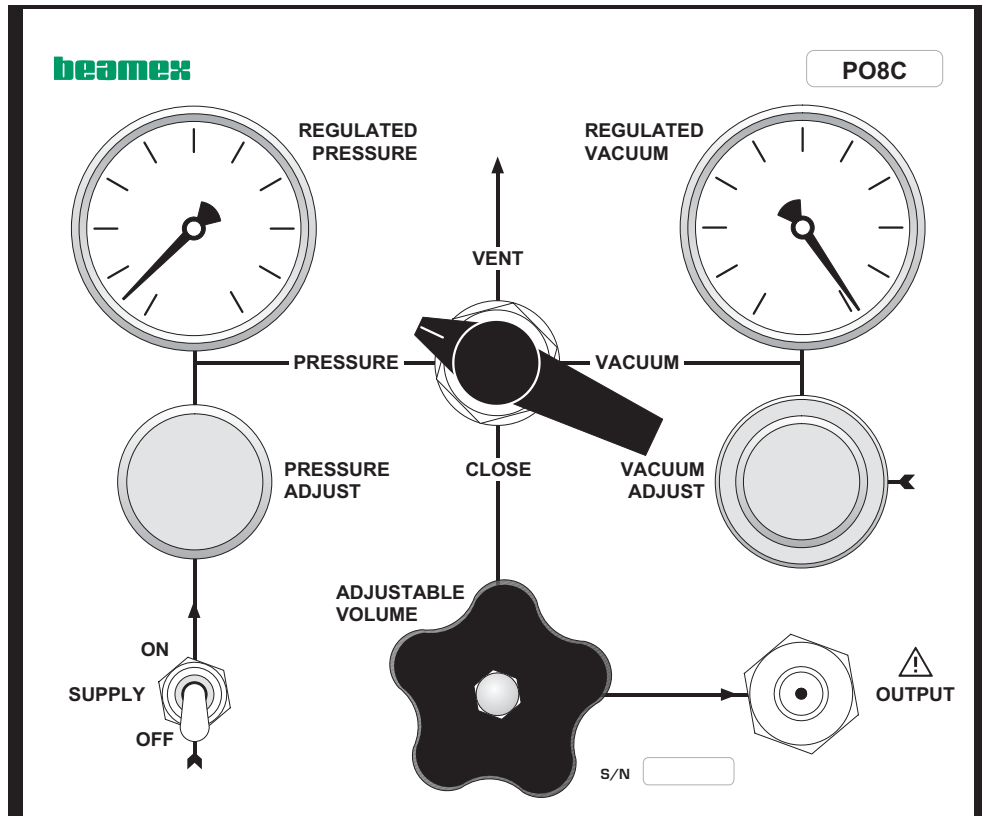
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General



PO8C is a variable pressure output module with an output range of -0.95 to 8 bar gauge (-13.7 to 116 psi).

PO8C includes

- On/Off valve for supply pressure
- Pressure adjuster for pressures above atmospheric pressure. The adjuster includes a nozzle flapper type pilot valve for precise pressure adjustment.
- Vacuum adjuster for pressures below atmospheric pressure. The adjuster includes a nozzle flapper type pilot valve for precise vacuum adjustment.
- Selector valve with four positions: PRESSURE, VACUUM, CLOSE and VENT.
- Adjustable volume for exact pressure setting.

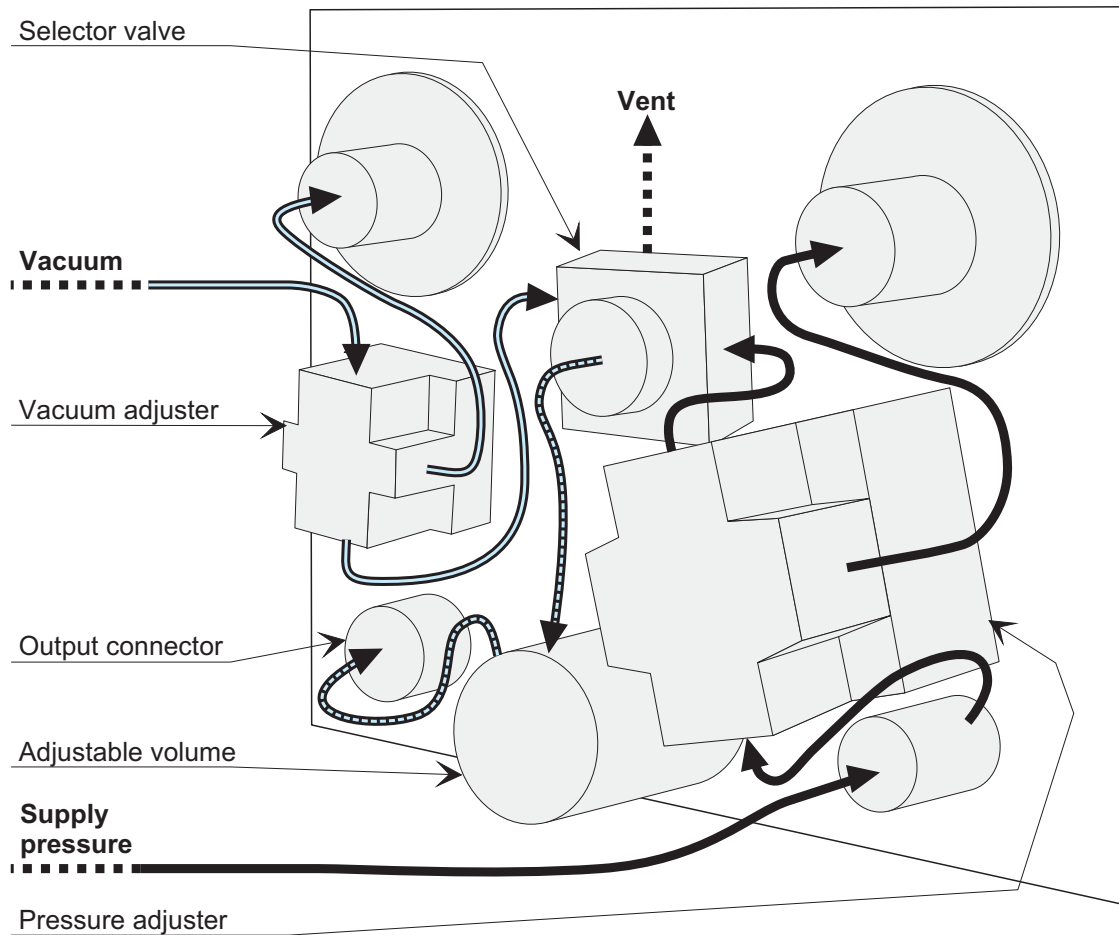
The maximum supply pressure to the PO8C Pressure Output Module is 10 bar (145 psi).

To achieve pressure values lower than the atmospheric pressure, a sufficient vacuum supply is required.

Connections

The PO8C module is connected to the MCS100 chassis via the supply pressure hose and the vacuum hose. Usually the output of the vent valve is disconnected.

As the connection depends on the type of your MCS100, refer to MCS100 User Guide part A, chapter **Internal connections** on how the supply pressure is connected to your MCS100.



Simplified diagram of the connections on the rear side of PO8C.

Specifications

General

Feature	SI Unit	Imperial
Width of module	214 mm	8.43"
Total weight of module	2.4 kg	5.3 lbs
Temperature range - operating - storage	10 to 60 °C -20 to 60°C	50 to 150 °F -4 to 140 °F
Sensitivity better than (depends on user)	1 mbar	0.015 psi
Maximum pressure for the delivered pressure hose	20 barg	290 psi g

Pressure Adjuster

Feature	SI Unit	Imperial
Medium	Clean dry air or other inert, non-toxic, non-corrosive gas If you are using Nitrogen, see Warnings on page 5.	
Maximum supply pressure	10 bar	145 psi
Minimum supply pressure	Set pressure + 0.5 bar	Set pressure + 7¼ psi
Regulating pressure range	0.1 to 8 bar	1.45 to 116 psi
Air consumption (discharged to the atmosphere)		
<ul style="list-style-type: none"> Bleed flow, max (ANR)¹ with 10 bar (14.5 psi) supply 	3.5 l/min	0.124 ft ³ /min
<ul style="list-style-type: none"> Exhaust flow, max (ANR) at maximum set pressure 	0.9 l/min	0.032 ft ³ /min

Vacuum Adjuster

Feature	SI Unit	Imperial
Regulating pressure range ²	-1 to -0.013 bar	-14.5 to -0.19 psi
Maximum atmospheric intake consumption ³ (ANR)	0.6 l/min	0.021 ft ³ /min

¹ ANR = "Atmosphere Normale de Reference",
in English: "standard reference atmospheric conditions".

² Lowest possible pressure depends on the vacuum source and atmospheric pressure.

³ Taking air from atmosphere all the time

Adjustable Volume

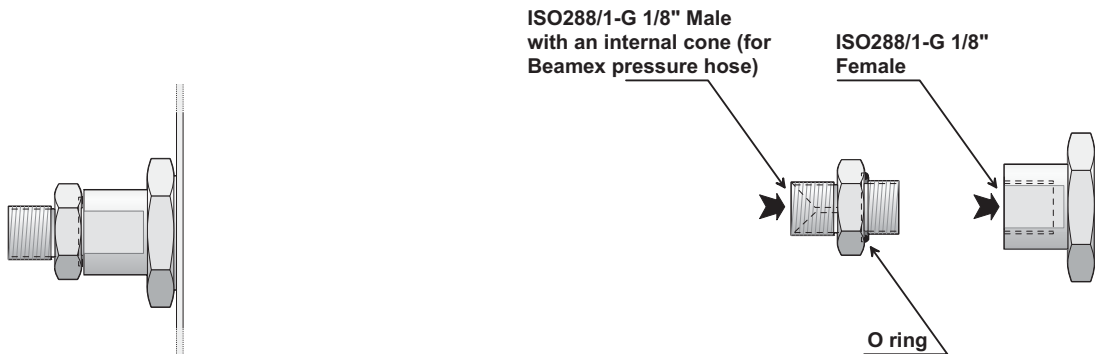
Typical pressure changes using volume's full stroke length.
With a Beamex T-pressure hose connected to PO8C, MC5 and one end plugged.

From max. to min. volume, starting pressure		Final pressure SI Unit	Final pressure Imperial Unit
0 barg (0 psig)	=>	0.83 barg	12 psig
7 barg (102 psig)	=>	12.6 barg	183 psig

From min. to max. volume, starting pressure		Final pressure SI Unit	Final pressure Imperial Unit
0 barg (0 psig)	=>	-0.46 barg	-6.67 psig
7 barg (102 psig)	=>	3.37 barg	48.9 psig
-0.5 barg (-7.25 psig)	=>	-0.73 barg	-10.5 psig
-0.9 barg (-13.5 psig)	=>	-0.94 barg	-13.6 psig

Output Connector

The connector is delivered as shown in the leftmost picture below. The connector includes an adapter to make it easy to connect pressure hoses delivered by Beamex. By removing the adapter, a standard ISO288/1-G 1/8" (internal parallel) thread is revealed for connecting other type of pressure hoses.



Warnings

General

Only personnel with good experience and knowledge of pressure equipment and pressurized gases are allowed to work with the module. Read carefully all these instructions and local safety instructions before starting to use PO8C.

High pressure gas is dangerous because it can break the container and the flying splinters may cause injury. Also small leaks of gas may be dangerous because the high velocity of the leaking gas jet enables penetration through skin. If a gas bubble gets into the blood circulation, it can cause death. The leak jet is particularly penetrative, if some liquid is coming with the gas.

Do not connect an external pressure source to PO8C's Output connector.

The total volume of measurement hoses and instrument measurement chambers connected to the PO8C's Output connector should not exceed 100ml (6.1 in³).

Do not use PO8C if conditions or specifications are beyond the given specifications. See Specifications on page 3.

Connections

When connecting an instrument to PO8C's OUTPUT connector, make sure that PO8C's output pressure is not too high/low to damage the instrument or any other equipment/hose being part of the pneumatic system .

If you open the supply valve when an instrument is connected to the pressure output connector, make sure that the pressure regulator is adjusted to a pressure that can not damage the connected instrument.

Do not use the same tubing with different liquids and gases. Use hand tightening with the pressure tubing connections.

When checking a process device, take care that it does not contain process fluid or particles. For vacuum instruments: The suction may transport the particles into PO8C. For positive gauge pressure instruments: When you VENT PO8C, the fluid or particles might flow into PO8C. In both cases, the result may be a damaged PO8C. If you are not sure that the tubing and the instrument measurement chamber are empty, use a proper collection chamber and/or filter between the instrument and the module.

Always depressurize the system before opening or connecting any pressure fittings or connectors. Use proper valves for venting the system.

Pressure Regulator Specific Warnings and Notes

Air supply: If the drain removal from the air filter and mist separator is missed, drain will be flown to the regulator (and onwards), resulting in a possibly malfunctioning equipment. When removing drain is difficult, use of a filter with auto-drain is recommended.

If the supply pressure line contains drain or particulate etc. the pressure regulator's fixed throttle can become clogged leading to malfunction. Therefore, in addition to an air filter, be sure to use a mist separator.

If you use nitrogen, minimize the leak to the atmosphere and take care of sufficient ventilation. Please note the Pressure Adjuster's Bleed Flow and Exhaust Flow rates found among the Specifications starting from page 3. Close the valve of the nitrogen cylinder, when the system is not in use. Increase in the percentage of nitrogen in the ambient air may cause unconsciousness and death without warning. Read carefully the safety instructions for nitrogen and make sure that the other people in the same space are aware of the danger.

Do not use the regulator outside the range its specifications as this can cause failure. Specifications can be found on page 3 of this manual.

Air is normally released from the bleed hole (the hole in the side of the body's mid-section). This is a necessary consumption of air based on the construction of the precision regulator and is not an abnormality.

When changing the set pressure, keep in mind that changes in gas pressure affects the gas temperature (which again, affects the pressure). Also, the tension/volume of the measurement hoses vary depending on the set pressure.

Vacuum Regulator Specific Warnings and Notes

The vacuum regulator uses atmospheric air (continuous suction). Use it in environments with clean dry air only. Do not use regulator in such environments where corrosive gases, chemicals or brine or water or steam is airborne, or where the regulator can be directly exposed to one of those.

Do not use in locations influenced by vibrations or impacts.

The vacuum regulator is for use of negative pressure only. Be sure that positive pressure is not applied instead. The vacuum regulator in itself is not damaged, however the positive pressure will enter vacuum pump. This may cause malfunction of the vacuum pump.

Note that an ejector's flow rate is smaller than that of the vacuum regulator and therefore is not suitable as a "vacuum supply". See **Specifications** on page 3 for details on atmospheric intake consumption.

Pressure response time when changing the set pressure depends on the inside diameter and length of the piping and also the capacity of the vacuum source.

Service

No serviceable parts inside except as noted further on. In case PO8C needs service, contact Beamex or your local representative. Beamex' contact info is on the prepages of this manual.

When disassembling PO8C, first make sure pressure and vacuum sources are disconnected.

Selector Valve

Packing adjustments may be required for leak-tight performance. Before servicing any installed valve you must depressurize the system, cycle the valve and purge the valve. Adjust the packing bolt clockwise in 1/16 turn increments until leak-tight performance is achieved.

To adjust the packing, remove the directional handle to see the packing bolt. Then use Swagelok adapter MS-WK-43 or a suitable tool to adjust packing.

WARNING!

Failure to periodically inspect and maintain valve packing may lead to product malfunction.

Operation

Turn the selector valve to VENT position.

Ensure that the regulated pressure is set to zero by turning the PRESSURE ADJUST knob **counterclockwise**. Also turn the VACUUM ADJUST knob **counterclockwise** and set the ADJUSTABLE VOLUME to its mid point.

Connect the output of PO8C module to the instrument under test and to a suitable pressure measurement module.

Turn selector valve to either PRESSURE or VACUUM position depending on your pressure needs. If you want to create pressures above atmospheric pressure, open SUPPLY valve to ON position.

To regulate the pressure, use either PRESSURE ADJUST or VACUUM ADJUST⁴ knobs (again, depending on your pressure needs). Observe the regulated pressure/vacuum value from the pressure calibrator's display. For exact pressure adjustment, close the selector valve and use the ADJUSTABLE VOLUME knob. Remember to make small changes and wait for the pressure to settle. Changes in gas pressure affects the gas temperature and the tension/volume of the measurement hoses.

To vent pressure, turn selector valve to VENT position. To avoid pressure shocks, rotate the selector valve to VENT position via the regulator used for creating the pressure.

When ready, ensure that the regulated pressure is set to zero by turning the PRESSURE ADJUST knob **counterclockwise**. Also turn the VACUUM ADJUST knob **counterclockwise**, return the ADJUSTABLE VOLUME to its mid point and set the selector valve to CLOSE position..

Note!

High pressure is always dangerous. Read carefully the instructions in chapter Warnings on page 5. Additional warnings can be found in MCS100 User Guide, chapters: Warnings When Using Pressure Modules on page 51 and Additional Warnings When Using High Pressure Modules on page 52.

⁴ Vacuum adjuster: Pull to adjust, push to lock.



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