



General Purpose Pressure Differential Switchover Manifolds High Pressure Cylinders by High Pressure Cylinders

SPECIFICATION

Pressure Differential Switchover Manifold

The BeaconMedaes General Purpose Pressure Differential Switchover Manifold is designed to supply piped non corrosive and non-flammable gases where continuity of supply is essential, and where the gas is to be supplied from high pressure gas cylinders. All individual components conform to CGA, NFPA, ISO and HTM requirements to form a gas control manifold to which maximizes safety requirements with simplified function. The Pressure Differential Switchover Manifold shall be supplied fully tested.

The duty bank is determined by operating the right hand regulator lever, which will adjust the set pressure to determine the lead regulator. Rotate clockwise to set right bank as duty, or anti-clockwise for left bank duty.

The duty bank will be depleted until the pressure drops below the switchover parameters. The gas supply will then automatically switchover to the standby bank. A signal can be taken to a remote alarm from the contact gauges to alert the requirement to change cylinders. The duty selector lever (aka priority bank selector) should then be switched over to the full running bank, and the empty cylinders changed. This cycle is then repeated to maintain continuous supply.

Pressure Regulation

The General Purpose Pressure Differential Switchover Manifolds come in two delivery pressure versions:

- 15-60 psig [1-4 barg] delivery pressure range
- 45-100 psig [3-7 barg] delivery pressure range

There shall be two separate stages of pressure regulation to enable high peak flow rates without a significant reduction in downstream pressure. Multistage regulators combined into a single unit are not acceptable. The inlet of the 1st stage regulator shall be protected from the particulate matter by a 25µm sintered brass filter. Sintered aluminum bronzes shall not be used. For oxygen service units, regulators shall comply with BS EN ISO 10524-2 and shall be supplied with documented test reports upon request, confirming successful completion of the oxygen ignition tests stated therein.

The manifold control system shall be capable of supplying a flow of 35 scfm [1,000 l/min] to a nominal 60 psi [400 kPa] distribution system, 70 scfm [2,000 l/min] to a nominal 100 psi [700 kPa] distribution system, based on a maximum allowable pressure drop of 10% from static to full flow. All regulators shall be protected from over-pressurisation by relief valves.

A pre-pipe kit shall be available for indoor installation, to enable the gas to be taken away and vented to atmosphere safely. Relief valves shall not be vented into the manifold room.

Materials

All polymers and elastomers in the gas flow that can be subjected to working pressure greater than 435 psi [3000 kPa] shall be halogen-free. The use of PTFE, PCTFE, Viton and other halogenated polymers in these applications is strictly prohibited. Non-return valves fitted to header manifolds shall have a metallic seat with ceramic ball. Soft seat non-return valves utilizing polymers or elastomers are not acceptable.

The wetted parts shall be brass components and fittings with copper piping.

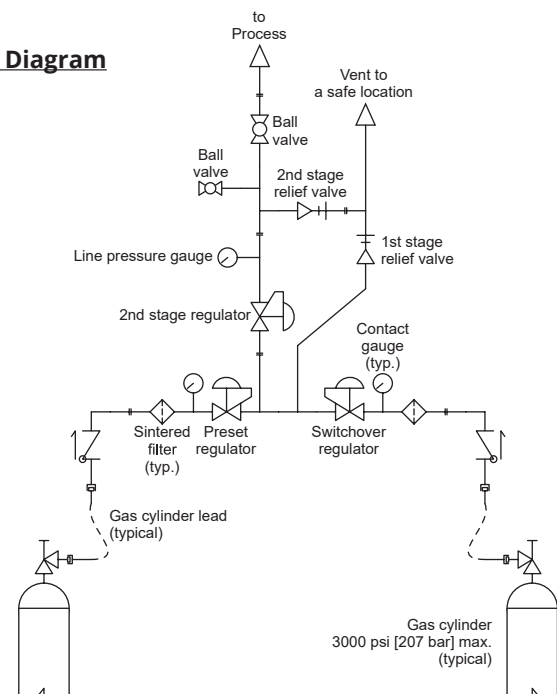
Header Bars

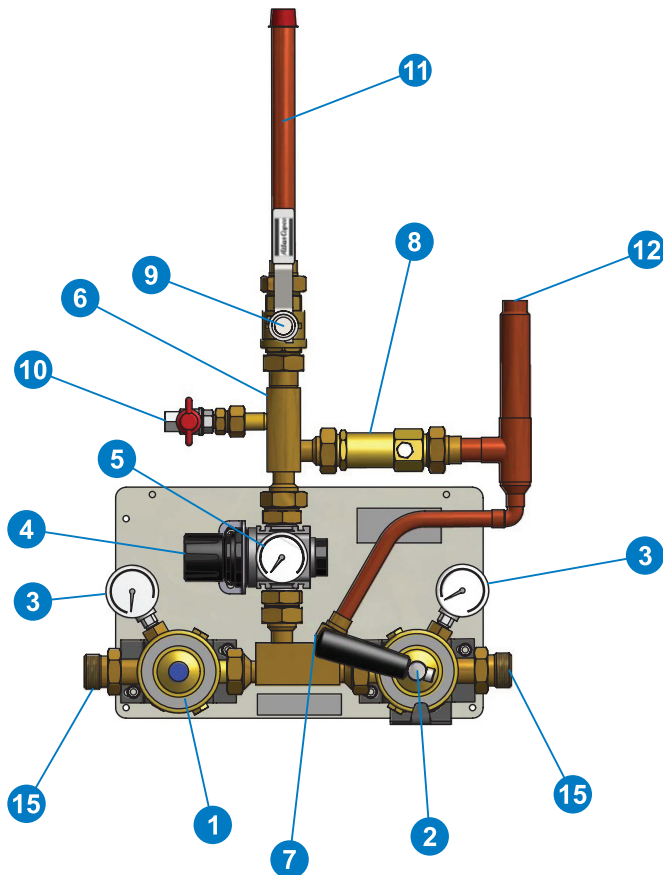
The manifold includes high-pressure modular header assemblies with gas specific pigtail-to-header high-flow check valves to permit changing of cylinders without gas leakage. Stainless steel flexible pigtails are provided for each cylinder gas connection, except for Oxygen, Argon, Nitrogen, Air, Nitrous Oxide and Inert Gas Mixtures.

Alarm Box

An alarm box shall be supplied as an option. The alarm box shall indicate when a bank is depleted via a visual (red LED) and a audible (buzzer) signal. The alarm box shall be equipped with a silence button that will kill the buzzer while the visual alarm remains actuated until the depleted bank is replenished. A dry contact shall be actuated each time there is a depleted bank to the manifold. The alarm box shall be provided with a 24 VAC step down power transformer.

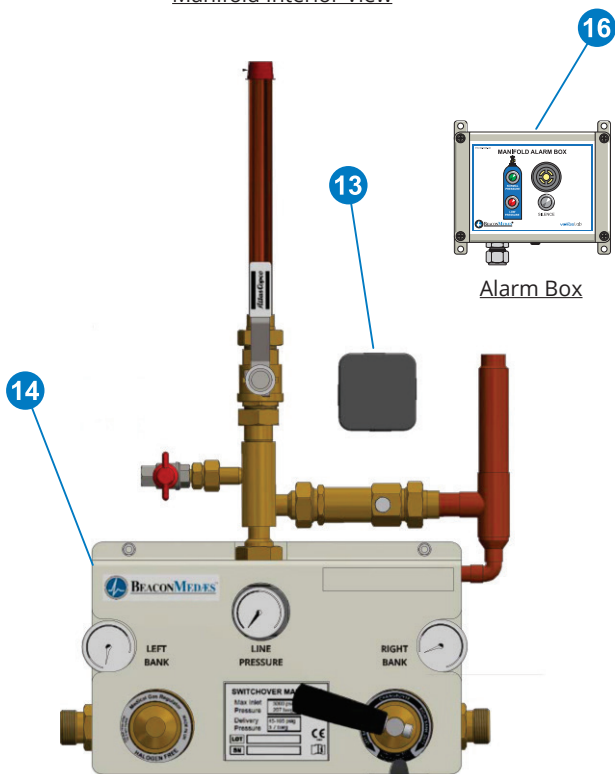
Flow Diagram



Pressure Differential Switchover Manifold Overview


Manifold Interior View

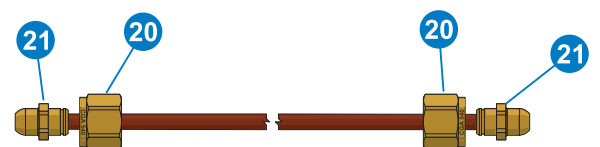
Item No.	Description	Standard Unit	Optional Feature
1	Pre-adjusted (fixed pressure) regulator	✓	
2	Switchover regulator	✓	
3	Cylinder content / contact gauge	✓	
4	Line regulator	✓	
5	Line pressure gauge	✓	
6	Integral check valve	✓	
7	First stage pressure relief valve	✓	
8	Line pressure relief valve	✓	
9	Lockable isolation ball valve	✓	
10	Test port ball valve	✓	
11	Gas Service outlet [O.D.:7/8"-22 mm]	✓	
12	PRV outlet adaptor [28 mm x 22 mm]	✓	
13	Alarm contact junction box	✓	
14	Manifold cover plate	✓	
15	Manifold box inlet (union adapter)	✓	
16	Manifold alarm box		✓
17	Spud check valve to each hose inlet	✓	
18	Header bar tailpiece	✓	
19	Header bar union nut	✓	
20	Gas specific cylinder nut	✓	
21	Gas specific cylinder nipple	✓	



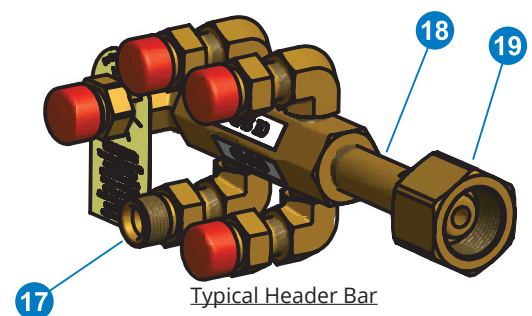
Manifold Exterior View



Typical Flexible Hose



Typical Rigid Copper Pigtail







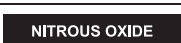



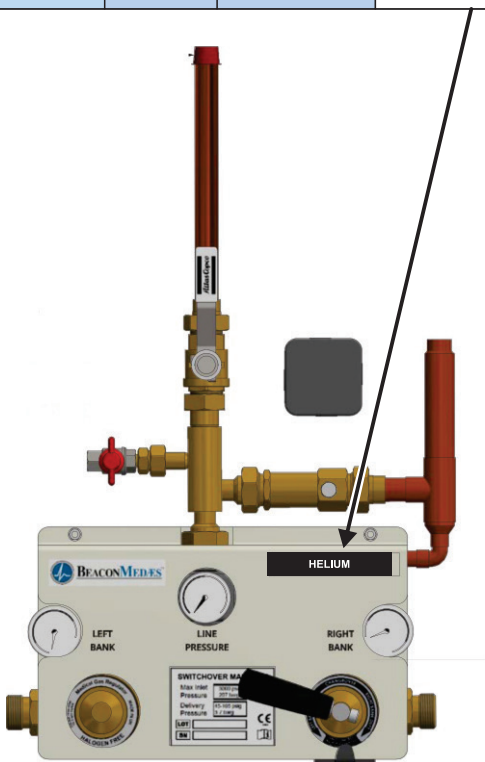
Typical Header Bar

Gas Service & Related Identification Scheme

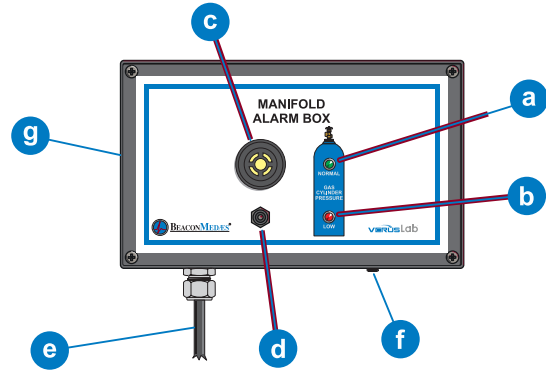
Each manifold is designed, made and cleaned for each of the gas listed below. The manifolds are shipped with gas identification stickers that shall be applied in the field that correspond to the intended gas service.

This manifold is not designed to be used for medical applications. The color scheme for the gas identification follows the recommendations of the Scientific Equipment and Furniture Association (SEFA).

Gas	Letters	Background	Sticker
Air	White	Orange	
Argon	White	Blue	
Carbon Dioxide	White	Pink	
Helium	White	Black	
Inert Gas Mixture	Black	Light Blue	
Nitrogen	White	Brown	
Nitrous Oxide	White	Black	
Oxygen	White	Green	



Optional Alarm Box



The alarm box is an option with this manifold. It can be ordered with the manifold or ordered at a later date. In both cases, the alarm box is wired to the manifold box in the field.

a Green LED

A green LED indicates both bank pressures are higher than 400 psig [28 barg].

b Red LED

The red LED indicates that either or both bank pressure are lower than 400 psig [29 barg].

c Buzzer

The 85 dBA buzzer is actuated each time a red LED is actuated.

d Silence Pushbutton

The silence pushbutton kills the buzzer but the red LED remains illuminated.

e Alarm Cable

The alarm cable provided with the alarm box is 10-ft long [3 meters]. One end of the cable is pre-wired to the alarm box. The other end has to be wired to the manifold box in the field.

f 24 VAC Power Receptacle

The alarm box runs on 24 VAC. A step-down power transformer is supplied with the alarm box.

g Alarm Box Enclosure

The alarm box enclosure is made out of ABS. The enclosure dimensions are 8.5" [215 mm] x 5.1" [130 mm] x 3.1" [77 mm].

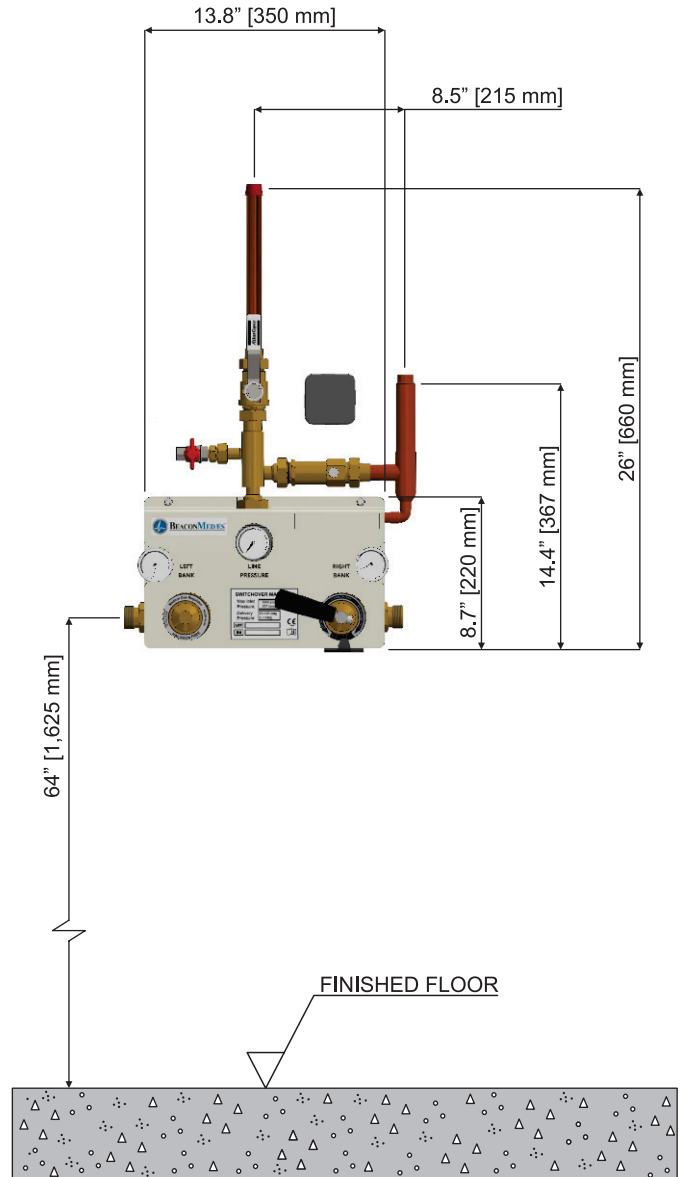
Cylinder Leads

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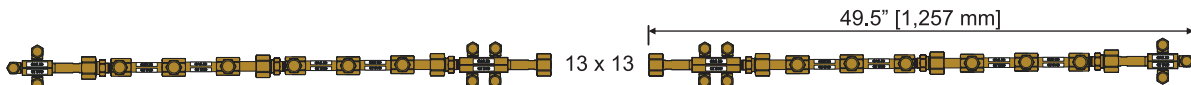
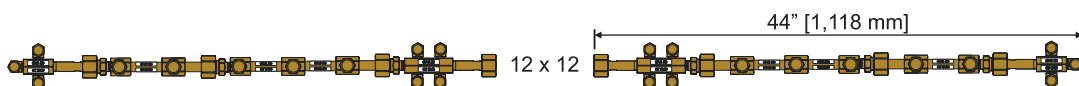
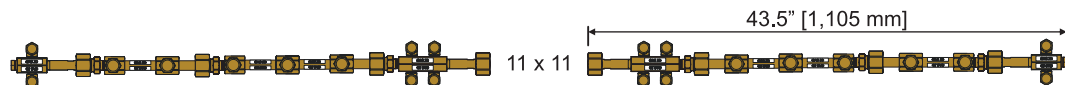
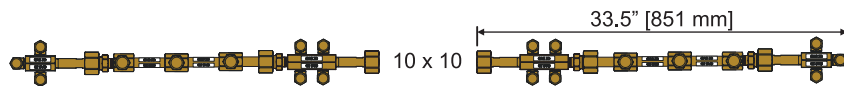
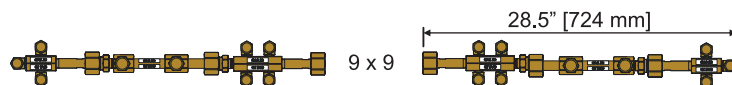
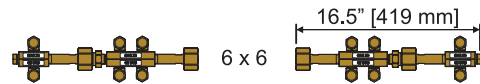
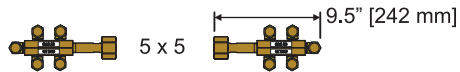
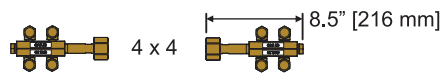
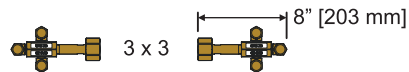
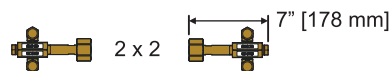
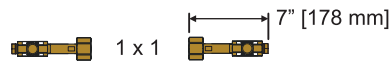
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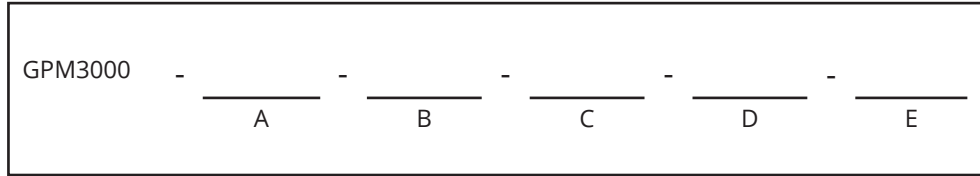
Gas	Cylinder Connection	Outlet Header Bar Side	Core	Inlet Cylinder Side
Air	CGA	CGA 346		CGA 346
	BS	CGA 346		BS-341-3
Argon	CGA	CGA 580		CGA 580
	BS	CGA 580		BS-341-3
Carbon Dioxide	CGA	CGA 320		CGA 320
	BS	CGA 320		BS-341-8
Helium	CGA	CGA 580		CGA 580
	BS	CGA 580		BS-341-3
Inert Gas Mixture	CGA	CGA 580		CGA 580
	BS	CGA 580		BS-341-3
Nitrogen	CGA	CGA 580		CGA 580
	BS	CGA 580		BS-341-3
Nitrous Oxide	CGA	CGA 326		CGA 326
	BS	CGA 326		BS-341-13
Oxygen	CGA	CGA 540		CGA 540
	BS	CGA 540		BS-341-3

Dimensions



Header Bars with Dimensions



Ordering Information


BeaconMedaes Manifold Parent Model Number Chart			
Variable	Definition	Value	Description
A	Gas Service	AIR AR CO2 HE N2 N2O O2 MIX	Compressed Air Argon Carbon Dioxide Helium Nitrogen Nitrous Oxide Oxygen Inert Gas Mixture
B	Number of Cylinders	0 x 0 1 x 1 2 x 2 3 x 3 4 x 4 5 x 5 6 x 6 7 x 7 8 x 8 9 x 9 10 x 10 11 x 11 12 x 12 13 x 13 14 x 14	0 x 0 1 x 1 2 x 2 3 x 3 4 x 4 5 x 5 6 x 6 7 x 7 8 x 8 9 x 9 10 x 10 11 x 11 12 x 12 13 x 13 14 x 14
C	Delivery Pressure	60 105	15 - 60 psig [1 - 4 barg] 45 - 105 psig [3 - 7 barg]
D	Cylinder Connection	CGA BS	North American British
E	Alarm Box	AB	Optional Alarm Box

Example

Manifold, Nitrogen Service, HP X HP 2 X 2 Cylinder, With Alarm Box, Installed in England, Delivery Pressure is 6 Bar

Part Number for example

GPM3000 - N2 - 2X2 - 105 -BS - AB