

## PureGAS™ Automatic Manifold

### Description

Automatic Changeover Manifolds are intended to provide a continuous supply of medical gases for respiratory, clinical and surgical use in healthcare facilities. The system shall be duplex such that the supply is maintained in single fault condition. The Automatic Changeover Manifolds shall be supplied pre-piped, pre-wired and fully tested and comply with the United Kingdom Department of Health (DoH) publication HTM 2022, HTM 02-01, NHS Model Engineering Specification C11 and ISO7396-1. A test certificate shall be provided with each system detailing the results of the factory tests.

Pneumatech MGS PureGAS™ Automatic Changeover Manifold are CE marked to the Medical Device Directive 93/42/EEC under the auspices of notified body no. 0088 (LRQA). Under this directive, manifold systems are classified as Class IIb Medical Devices.

### Classification

- PureGAS™ Manifold is designed to ISO 7396-1, HTM 02-01 & HTM 2022
- CE marked 0088
- EMC Test passed
- Adiabatic test passed
- Halogen polymers free

### Features

- Digital 3.5' colorful display
- Integrated & protected test point (Zeus terminal unit)
- Central regulator panel with cylinder headers each side
- Headers are complete with gas specific cylinder tailpipes
- Pre-wired for alarm connection to BMS outputs
- All components degreased for oxygen use
- Average gas consumption indication (for not liquefied gases)
- Remaining gas volume indication (for not liquefied gases)
- General maintenance indicator

### Services for Use

- |   |                              |
|---|------------------------------|
| • Oxygen                                      | 400 kPa (4 bar)              |
| • Nitrous Oxide                               | 400 kPa (4 bar)              |
| • O <sub>2</sub> /N <sub>2</sub> O (50%/ 50%) | 400 kPa (4 bar)              |
| • Medical Air                                 | 400 kPa (4 bar)              |
| • Surgical Air                                | 700 & 1,100 kPa (7 & 11 bar) |
| • Nitrogen                                    | 700 & 1,100 kPa (7 & 11 bar) |
| • Carbon dioxide                              | 400 kPa (4 bar)              |

### Mounting

- Mounted on a powder coated backplate.
- For simplicity of installation separate installation bracket provided
- Front fascia molding made from lightweight chemical and corrosion resistant, glass-reinforced polymer



### Pressure Sensors

- Pressure transmitters monitor both banks of cylinders
- Set to 15 bar changeover pressure (0-315 bar typically / 0-160 bar N<sub>2</sub>O);

### Pressure Reduction Capacity

- Maximum inlet pressure: 23,000 kPa (230 bar)
- Outlet pressure reduced to: 400 kPa (4 bar), 700 kPa (7 bar) or 1,100kPa (11 bar)

### Flow Rate

- |                             |             |
|-----------------------------|-------------|
| • 400 kPa (4 bar) system    | 1,750 L/min |
| • 700 kPa (7 bar) system    | 2,000 L/min |
| • 1,100 kPa (11 bar) system | 2,000 L/min |

### Header Rack Services

- Gas specific tailpipes thread sizes:
- Nitrous Oxide M18 x 2
- Oxygen M20 x 2
- Air M24 x 2
- O<sub>2</sub>/N<sub>2</sub>O M22 x 2
- Nitrogen M14 x 2
- CO<sub>2</sub> 3/8" BSP

### Relief Valve Settings

- |                           |                             |
|---------------------------|-----------------------------|
| • Nominal 4 bar manifold  | 530kPa (5.3 bar) relieving  |
| • Nominal 7 bar manifold  | 1,100kPa (11 bar) relieving |
| • Nominal 11 bar manifold | 1,320kPa (13 bar) relieving |



## Electronic Control System

- The system should have a universal input and work in a wide power range: AC 90 to 264 Volts 50/60 Hz.
- The manifold control system shall be powered by an extra low voltage on board supply. A separate power supply board should be foreseen.
- The controller shall include alarm connections with a wire monitoring technology and sets of BMS connections for both normally open and normally closed operation.
- Line pressure shall be continuously monitored by an electronic pressure sensors; mechanically actuated pressure switches are not acceptable.
- The manifold shall be capable of being fully isolated via a full flow ball valve in order to change any regulator without interruption of supply.
- In the event of a low line pressure condition, both solenoid valves shall open to enable both banks to deliver gas and restore normal pipeline pressure.
- The system should incorporate graphical display to indicate pressure level in each bank of cylinders and a line pressure. Digital display should be backed up by mechanical gauges in case of power failure.
- All alarms should be duplicated on a display and embedded membrane panel with LEDs. A manifold status panel shall be provided with colour coded LED indication lights for the following operating and fault indications:

- Power On (Green)
- High Line Pressure (Red)
- Low Line Pressure (Red)
- Reserve Low (Amber)
- Left Bank Running (Green)
- Left Bank Low (Amber)
- Left Bank Empty (Amber)
- Right Bank Running (Green)
- Right Bank Low (Amber)
- Right Bank Empty (Amber)



## Pneumatic Control System

- The pressure regulators shall be designed and certified for use of oxygen at 230 bar and 60°C. Auto-ignition testing shall be carried out and a copy of the test report shall be available on request. All components in the gas stream and contact with the oxygen pressures above 30 bar shall be made out of halogen-free materials;
- Isolation valves shall be foreseen to prevent back flow of gas from the opposite bank during maintenance. Non-return valves are not allowed;
- The line pressure relief valve shall be provided with easing gear;
- Sintered filter at inlet to 1st stage shall be installed to protect gas supply;
- A line pressure safety valve with easing gear and a piped exhaust connection shall be fitted to protect the pipeline system from over-pressure and shall be fitted downstream of the bank non-return valves;

- A integrated test point shall be isolated from the supply with a 15mm ball valve. Due to common installation in basements or similar industrial environments, a test point shall be protected to limit contamination by dust;
- The manifold shall be supplied with a non-return valve for connection to the distribution system;

## Installed Manifold Dimensions

Number of Cylinders	Overall Length, mm	Weight, kg
2 x 1	1,181	27
2 x 2	1,509	28
2 x 3	2,192	32
2 x 4	2,519	32
2 x 5	3,202	36
2 x 6	3,529	37
2 x 7	4,211	40
2 x 8	4,538	41
2 x 9	5,221	44
2 x 10	5,548	45
2 x 11	6,231	48
2 x 12	6,558	49

## Manifold Part Numbers

Description	Part No
O <sub>2</sub> PureGAS Manifold Control System	8102341320
N <sub>2</sub> O PureGAS Manifold Control System	8102341321
O <sub>2</sub> /N <sub>2</sub> O PureGAS Manifold Control System	8102341322
MA-4 PureGAS Manifold Control System	8102341323
SA-7 PureGAS Manifold Control System	8102341324
SA-11 PureGAS Manifold Control System	8102341325
N <sub>2</sub> -7 PureGAS Manifold Control System	8102341326
N <sub>2</sub> -11 PureGAS Manifold Control System	8102341327
CO <sub>2</sub> PureGAS Manifold Control System	8102341328
Heater Kit (N <sub>2</sub> O, CO <sub>2</sub> and N <sub>2</sub> O/O <sub>2</sub> 50%/50% mixture)	2000295
Retrofit kit 1500SP to PureGAS (If the 1500SP has no heater)	8012369822
Retrofit kit 1500SP to PureGAS (If the 1500SP has a heater)	8102369823

### Note:

1. For N<sub>2</sub>O, CO<sub>2</sub> and N<sub>2</sub>O/O<sub>2</sub> 50%/50% mixture heater kit should be ordered separately.
2. Manifold control panel weight is 24 kg.



## Manifold header's product numbers

	Manifold Header Assemblies						Header Extensions	
	2 x 1 Cyl	2 x 2 Cyl	2 x 3 Cyl	2 x 4 Cyl	2 x 5 Cyl	2 x 6 Cyl	1 Cyl	2 Cyl
O <sub>2</sub>	2005226	2000257	2000258	2000259	2000260	2000261	2000232	2000204
N <sub>2</sub> O	2005227	2000262	2000263	2000264	2000265	2000266	2000233	2000205
O <sub>2</sub> /N <sub>2</sub> O	2005228	2000267	2000268	2000269	2000270	2000271	2000234	2000206
Med Air	2005229	2000272	2000273	2000274	2000275	2000276	2000235	2000207
N <sub>2</sub>	2005230	2000277	2000278	2000279	2000280	2000281	2000242	2000243
CO <sub>2</sub>	2005231	2005209	2005210	2005211	2005212	2005213	2005110	2005108



Notes: 1. Manifold header assembly comes complete with left and right bank. Header extensions kits contain one side only and are not handed until final assembly on site (eg. 2 off required, 1 per side).

2. For additional cylinders beyond 6 continue to add the above for either single or double racks.

3. 3/8" plug and bonded seal is required on the last cylinder header on each bank.

Description	Part No
Manifold Header Corner Connector - one side	2000227

Description	Part No
2 Cylinder Spare Rack	2000282
3 Cylinder Spare Rack	2000283
4 Cylinder Spare Rack	2000284
5 Cylinder Spare Rack	2000285
6 Cylinder Spare Rack	2000286



Tailpipe	O <sub>2</sub>	N <sub>2</sub> O	N <sub>2</sub> O / O <sub>2</sub>	Air	CO <sub>2</sub>	N <sub>2</sub>
Pin-Indexed (ISO 407) <sup>2</sup>	8102340110	8102340123	8102340130	8102340140	8102340151	
Pin-Indexed (ISO 407) Extended	8102340116		8102340131	8102340146		
Bull nose (ISO5145) <sup>2,3</sup> , Side entry	8102369663		8102369664			
Bull nose (BS341) <sup>1</sup> Top entry	8102340111			8102340141		8102340161
Bull nose (BS341) <sup>1</sup> Side entry	8102340112	8102340120		8102340142	8102340150	
Bull nose (BS341) <sup>1</sup> Extended	8102340117	8102340125		8102340147	8102340154	
US Std (CGA)	8102340114	8102340122		8102340144		
Chinese Bullnose	8102340115	8102340124		8102340145	8102340152	8102340162

### Notes:

1. Bullnose tailpipes (except Chinese type) are to the following BS standards: Oxygen, Air, Nitrogen: BS: 341-1 No. 3; Carbon dioxide: BS: 341-1 No. 8; Nitrous oxide: BS: 341-1 No. 13.

2. Mixture N<sub>2</sub>O - O<sub>2</sub>, (registered trade name Entonox BOC) low pressure cylinder "G" type has Pin-indexed connector according to standard BS EN ISO 407 and 230 bar cylinder "EW" type has Bull nose connector according to ISO 5145 No. 13.

3. Oxygen cylinder "J" type has Pin-Indexed connector according to ISO 407, where "W" type (230 bar) has Bull nose according to ISO 5145 No. 5.

