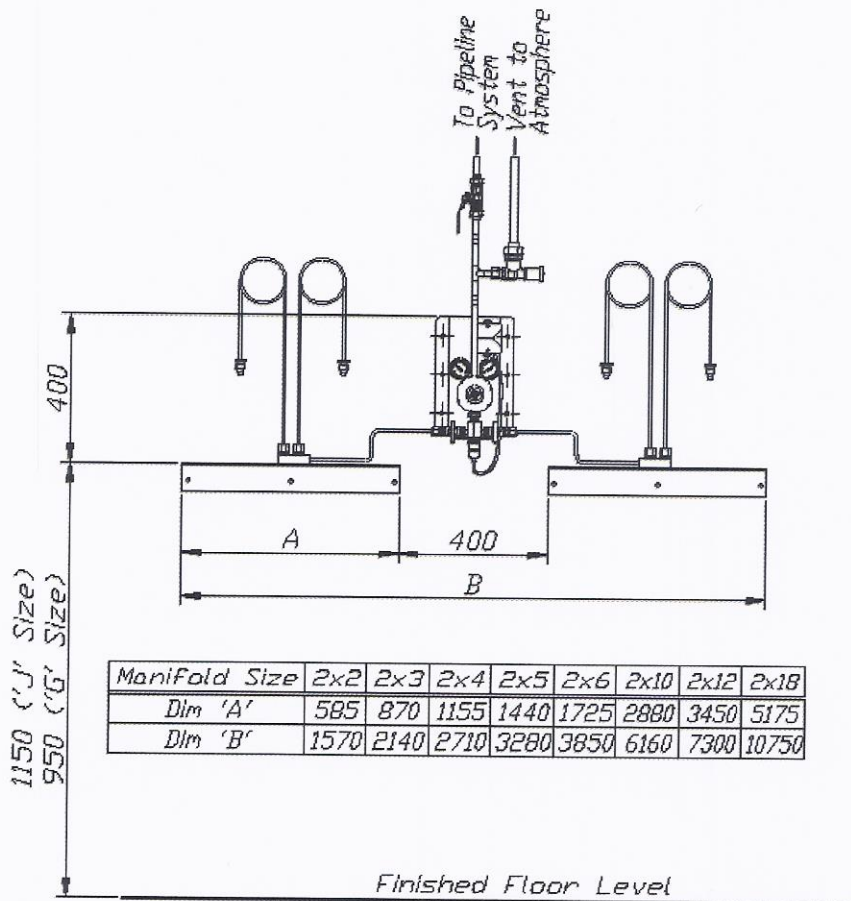


CPX MANUAL MANIFOLD
INSTALLATION, OPERATIONS & MAINTENANCE MANUAL



VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	<i>Kevin Pugh</i>	<i>11/09/2013</i>	<i>Rob Parry</i>		<i>1st Issue</i>
2.0	<i>Matthew Dean</i>	<i>28/10/2015</i>			Regulatory requirements edited

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1 INTRODUCTION

- The CPX Precision UK manual manifold shall fully comply with the requirements of the UK DoH Health Technical Memorandum 02-01 (HTM 02-01).
- The manual manifold shall be manufactured under an ISO 13485:2003 quality management system. A copy of the certificate of registration shall be provided for review.
- The manual manifold shall be designed and certified for use with oxygen at 200 bar and 60°C.
- The manual manifold shall provide an uninterrupted supply of medical oxygen from equally sized high pressure cylinder banks via a suitable arrangement of pressure regulators, providing a constant downstream nominal pipeline gauge pressure of 400 kPa. (SA7-700 Kpa)

1.1 KEY FEATURES

The Manual Changeover Manifold consists of a central regulator panel flanked by two cylinder headers complete with cylinder tailpipes.

Gas cylinders are attached to each side and the duty bank is manually selected by opening a valve on the central panel.

When the cylinder bank is low the manifold must be manually switched to the other (full) bank while the exhausted cylinders are replaced and the cycle continues as the new bank is used.

This manifold can be used as a reserve / back up manifold in support of a liquid Oxygen system.

The Emergency Standby Manifold is a two-cylinder header and regulator usually used as emergency back up to a HTM 2022 automatic manifold.

Both types of manifold include pressure gauges to monitor cylinder banks and outgoing pressure.

Available to suit either 400 Kpa or 700 Kpa systems.

All cylinder connections are gas-specific.

Non-return valves are located in the manifold headers at each cylinder location.

Particle filter on inlet to regulator.

Available in wall mounted or free-standing formats.

Includes facility to monitor gas contents.

Includes pressure relief and isolation valve.

Space saving layout available with high-pressure bends to enable headers to be located in manifold room corners.

Manual changeover components mounted on one common back-plate for ease and speed of installation.

Heavy-duty steel headers and back-plates offer protection against damage from cylinders.

1.2 SYSTEM OPERATIONS

The Manual Changeover Manifold is operated by manually selecting a bank of cylinders by opening one of the valves on the central panel.

When the contents of the first bank are near exhaustion the valve is closed and the second bank brought into use by opening its valve.

Pressure switches on each header monitor the contents of each bank.

The Emergency Supply Manifold is connected to the piped distribution system (usually adjacent to the main source of supply) with its isolation

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valve closed and with one cylinder valve fully open and the other cylinder valve closed.

If the main source of supply fails opening the isolation valve and closing the valve from the main supply source instigates the reserve.

Cylinder contents must be carefully monitored during this period and when the first cylinder is exhausted opening the cylinder valve activates the second.

1.3 SAFETY

- The CPX Manual manifold must be fixed in consultation with the construction manager during installation procedure.
- The methods described for the fixation, gases and power supply are general recommendations and their implementation is to be planned and designed for each individual case by qualified experts.
- **Precision UK manual manifolds are not suitable for use in potentially explosive areas.**
- CPX manual manifolds are suitable for continuous duty.
- CPX manual manifolds are pre wired in accordance with BS EN 7671 wiring regulations.



This equipment should be kept clean and be free from oil and grease at all times. Oil and grease will ignite spontaneously in the presence of oxygen. If you suspect that any equipment is contaminated. DO NOT USE IT.

No attempt should be made to use or modify this equipment for use with gas other than the gas identified.

2 INSTALLATION

The manifolds are installed by bolting the headers to the plant room walls or floor and connecting the copper outlet pipe stub to the system.

The discharge from the safety relief valve should be piped to atmosphere to discharge in a safe position.

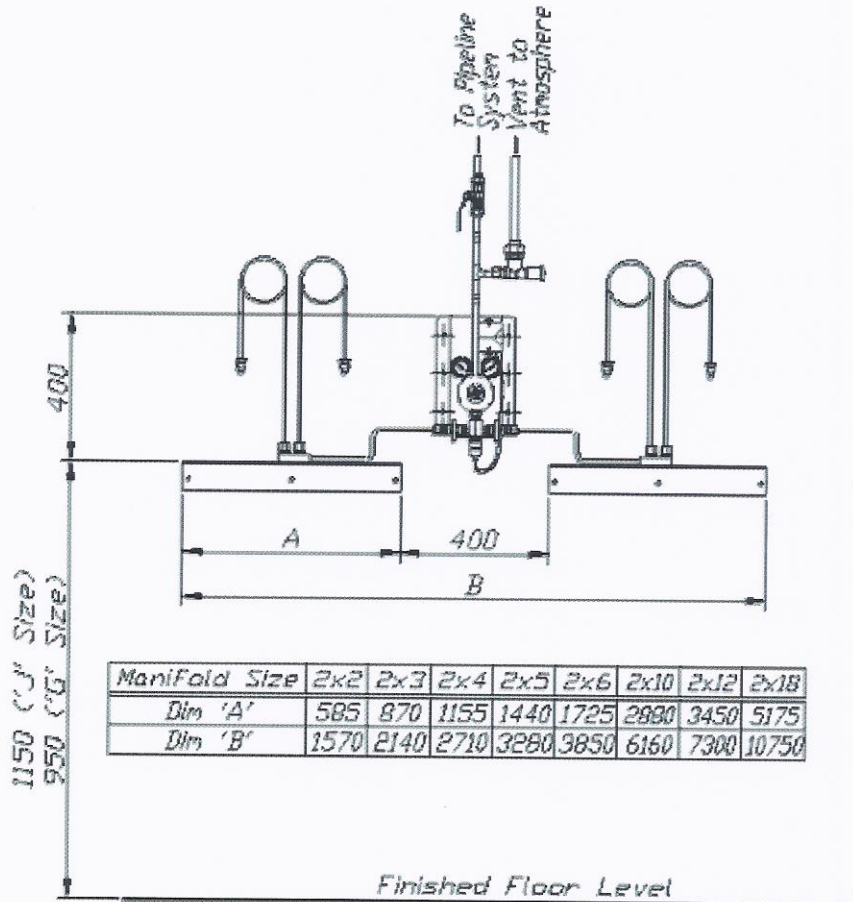
2.1 Mechanical

- (a) Secure the manual manifold header rack to the wall using suitable fixings at the height indicated in figure 2.3.
- (b) Install the outlet stub pipe, pressure relief valve and isolation valve.
- (c) Install the exhaust pipeline from the pressure relief valve to a safe external location.
- (d) Install all tailpipes onto the manifold headers.
- (e) Check and tighten all mechanical joints.
- (f) Connect cylinders, pressurise the manifold and check for leaks.
Make sure that the isolation valve is closed if the connection to the distribution pipeline has been made.

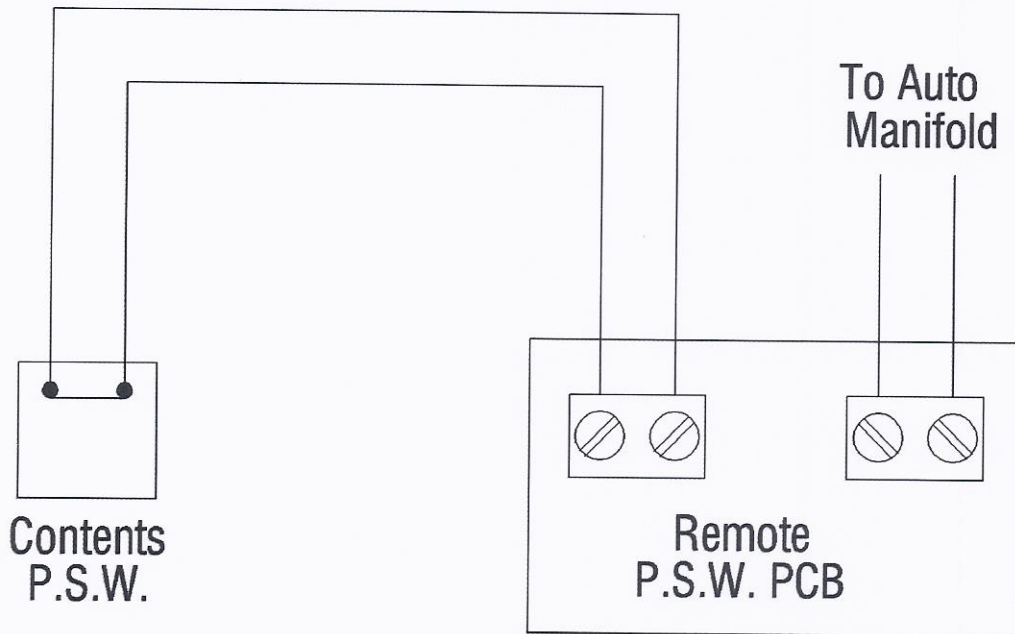
2.2 Electrical

- (a) Remove the fascia from the termination box mounted on the header rack.
- (b) Connect the manual manifold pressure switches into terminals 1 and 2 of CON1 on the monitoring and status panel PCB. Refer to figure 2.4.

2.3 Installation Drawing



2.4 Electrical Schematic Diagram



3 MAINTENANCE

Maintenance of the manifold should be restricted to periodic checking and adjustment and if necessary the replacement of faulty components. It should be noted that although many of the components appear to be standard items, many have been selected and treated to make them suitable for the gases carried and the pressures involved.

4 PREVENTATIVE MAINTENANCE

Regular inspections and maintenance of the manifold will prolong its life and reduce the possibility of sudden, inconvenient component failures.

Manifolds should be subjected to regular inspection and testing as detailed below.

- Monthly;
 - (a) Visually inspect the manifold for signs of damage.
 - (b) Check all mechanical joints for leaks.
 - (c) Check that cylinders connected are full.

- Annually;
 - (a) Visually inspect the manifold system for signs of damage.
 - (b) Check all mechanical joints for leaks.

All maintenance should be carried out with the knowledge of the hospital engineer and in accordance with the Permit-to-Work system.

5 SPARE PARTS

When ordering spare parts, please quote the batch number of the equipment and a description of the component required to ensure that you receive the component that you require!

6 WARRANTY

The CPX Emergency Standby manifolds comes with a 12 month warranty from day of shipment. Within this period Precision UK will repair, replace any part on site, or at the factory, which is proven defective at Precision UK's cost.

Furthermore, Precision UK will warrant its materials to be free from defects for an additional period of four (4) years (five (5) in total from date of shipment). Within this period Precision UK will replace any part, at no charge, which is proven to be defective. Shipping cost after the first twelve (12) months will be borne by the customer.

This warranty is valid when the product has been properly installed according to Precision UK's specifications, used in a normal manner and serviced according to the factory recommendations. It does not cover failure due to damage which occurs in shipments or failures which resulted from accidents, misuse, abuse, neglect, mishandling, alteration, misapplication or damage that may be attributable to acts of god.

Precision UK shall not be liable for incidental or consequential damages resulting from the use of this equipment.

7 CONTACT US

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8 REGULATORY REQUIREMENTS

The following British, European and International Standards have been consulted during the design, manufacture and testing of the bed head unit.

- √ BS EN 14971 Medical Devices. Risk Analysis.
- √ BS EN 13348 Copper and copper alloys. Seamless round copper tubes for medical gases or vacuum.
- √ BS EN 1044 Brazing. Filler metals.
- √ BS EN 980 Graphical symbols for use in the labelling of medical devices.
- √ BS EN 1089:3 Transportable gas cylinders. Gas cylinder identification (excluding LPG). Colour coding.
- √ ISO 7396-1 Medical gas pipeline systems. Pipeline systems for compressed medical gases and vacuum.
- √ ISO 32 Gas cylinders for medical use. Marking for identification of content.
- √ ISO 554 Standard atmospheres for conditioning and/or testing. Specifications.
- √ SS 01 91 02 Colour atlas.
- √ HTM 2022 Medical gas pipeline systems. Design, installation, validation and verification.
- √ HTM 02-01 Medical gas pipeline systems. Design, installation, validation and verification
- √ C11 NHS model engineering specification – medical gases.

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Appendix A: Operations & Maintenance Manual Approval


The undersigned acknowledge they have reviewed the automatic manifold **Installation, Operations & Maintenance Manual** and agree with the approach it presents. Changes to this **Operations & Maintenance Manual** will be coordinated with and approved by the undersigned or their designated representatives.

Signature:  Date: 28/10/15

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