

Automatic Changeover Manifold Single/Double Oxygen Tank Liquid Manifold Control System (SOT LMCS / DOT LMCS)

SPECIFICATION

Manifold Control Panels

The BeaconMedæS LMCS (Liquid Manifold Control System) shall conform to NHS Health Technical Memorandum Nos. 2022 (HTM2022) and 02-01 (HTM02-01). The manifold control system shall provide an uninterrupted supply of medical oxygen gas at 410 kPa (4.1 bar gauge) pressure.

Two arrangements of control panel shall be available. Either a Single Oxygen Tank (SOT) LMCS, including an integrated modular manifold assembly for high pressure cylinder banks (secondary source) or a Dual Oxygen Tank (DOT) LMCS where two bulk liquid tanks shall be installed, one as the primary source of supply and one as a secondary source of supply.

Control panels are installed within weather proof enclosure and shall be suitable for outdoor application. A powder coated steel support frame and legs shall be included to allow for free standing positioning if required.

The entire system shall be 'duplexed' such that any single functional component failure will not affect the integrity of the medical gas supply. The manifold shall be supplied fully assembled and tested.

The power source shall be mains operated using 110V-230V, 50/60Hz, alternating current 3.0 amps.

SOT LMCS Design

The BeaconMedæS Single Oxygen Tank LMCS (Liquid Manifold Control System) shall supply Oxygen medical gas from a Liquid Tank through an inlet in the intermediate pressure zone through 2nd stage regulators to the hospital pipeline distribution system. The SOT will also automatically supply Oxygen from high-pressure cylinders from both left and right hand manifold banks in turn should the Liquid supply fail.

The Manifold Control System shall supply a flow of 1800 L/min. to a 400 kPa (4 bar) distribution system from the liquid tank, and a flow of 1000 L/min. to a 400 kPa (4 bar) distribution system from the cylinder banks. These flow rates are achieved with only one second stage regulator on line.

There are pressure gauges for each bank and the line pressure, to give a visual indication of the status of the system. The panel has connection points for a remote alarm and BMS system. Above the pressure gauges is the system condition panel, which incorporates indicators to show: -

DOT LMCS Design

The BeaconMedæS Low Flow Dual Oxygen Tank LMCS (Liquid Manifold Control System) shall supply Oxygen medical gas from a Liquid Tank through a duplex set of regulators to the pipeline. The LMCS will also automatically supply Oxygen from a reserve liquid Oxygen tank should the duty liquid tank supply fail or run empty.

The LMCS is designed to operate outdoors in its enclosure at temperatures of -33°C to +55°C, its operation and performance criteria shall also fully satisfy the requirements of HTM02-01, HTM2022/C11 and it is CE marked.

The low flow DOT Liquid Manifold Control System is capable of supplying a flow of 1800 L/min. to a 400 kPa (4 bar) distribution system from suitably sized liquid tank and vaporiser equipment. This flow rate is achieved with only one regulator on line.

The high flow DOT Liquid Manifold Control System is capable of supplying a flow of 3500 L/min (with duplex regulators installed, 1 online and 1 standby), or 5000 L/min (with triplex regulators installed, 2 online and 1 standby), to a 400 kPa (4 bar) distribution system from suitably sized liquid tank and vaporiser equipment.

This flow rate is achieved with only one regulator on line.

Indicators and Alarms

There are pressure gauges for each tank and the line pressure, to give a visual indication of the status of the system. The panel has connection points for a remote alarm and BMS system. Above the pressure gauges is the system condition panel, which incorporates indicators to show: -

Indicator	DOT LMCS Legend	Alarm Condition
(a) Green	"Power On"	
(b) Green	"Normal"	Normal
(c) Green	Running" Duty & Standby Tank	
(d) Yellow	Empty" Duty & Standby Tank	
(e) Yellow	"Re-fill Liquid"	Re-fill Liquid (Duty tank @25%)
(f) Yellow	"Re-fill Immediate"	Re-fill immediate (Duty tank empty)
(g) Red	"Reserve Low"	Reserve low (Standby tank @ 50%)
(h) Red	Pipeline "High Pressure"	Pressure fault
(i) Red	Pipeline "Low Pressure"	Pressure fault

Materials

All polymers and elastomers in the gas flow that can be subjected to working pressure greater than 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 utilising polymers or elastomers are not acceptable.

Modular Header Manifolds

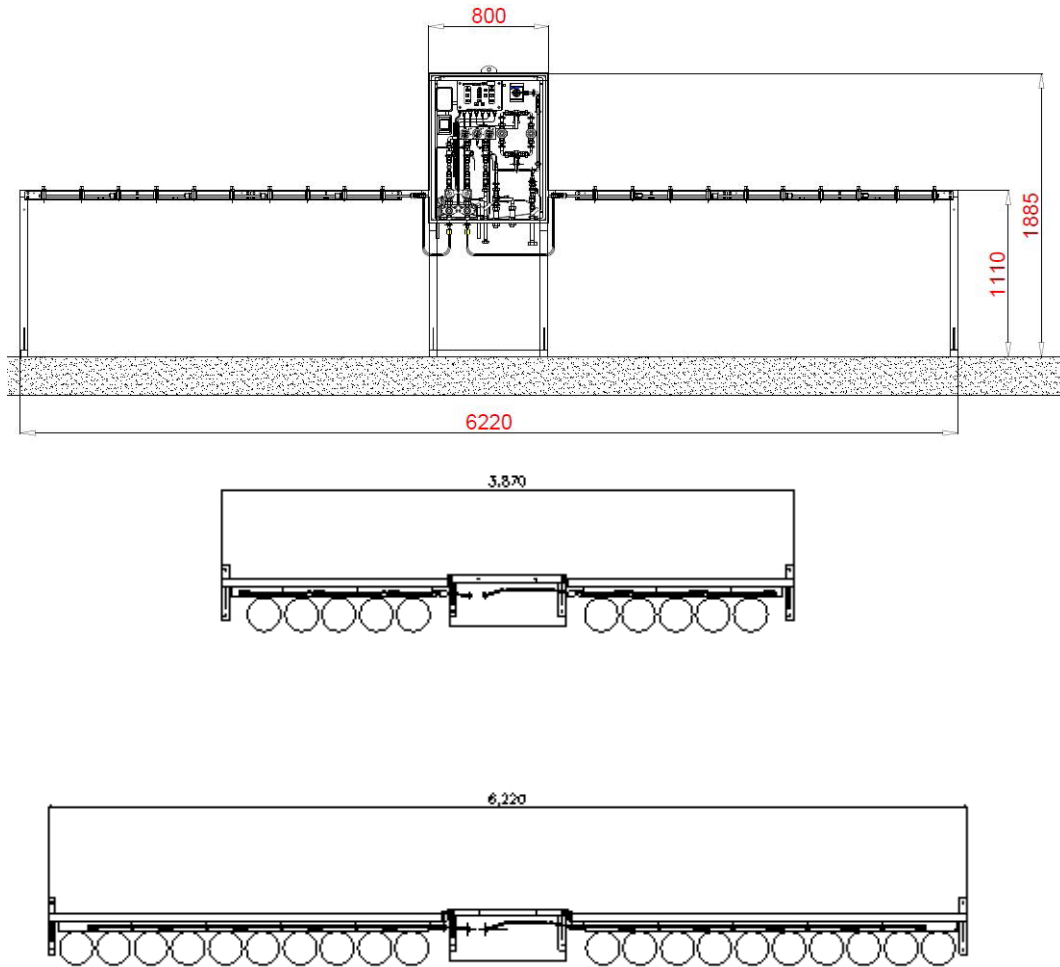
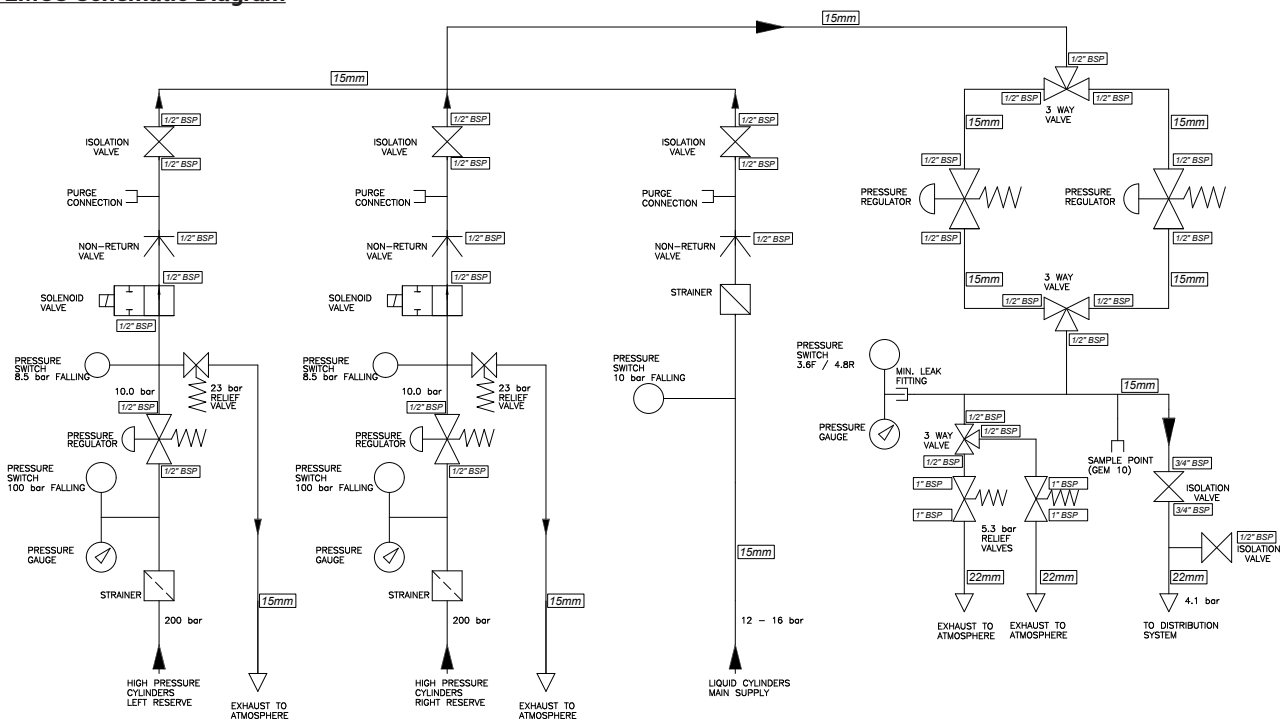
Modular header manifolds shall provide connection points for flexible cupronickel tailpipes. They shall be available in 'primary' and 'secondary' configurations, with either single or double cylinder connection points. 'Primary' headers shall connect directly to the manifold control system with extensions for additional cylinders being provided by the addition of 'secondary' headers. Non-return valves shall be fitted to each tailpipe connection point to protect the system in the event of a tailpipe fracture.

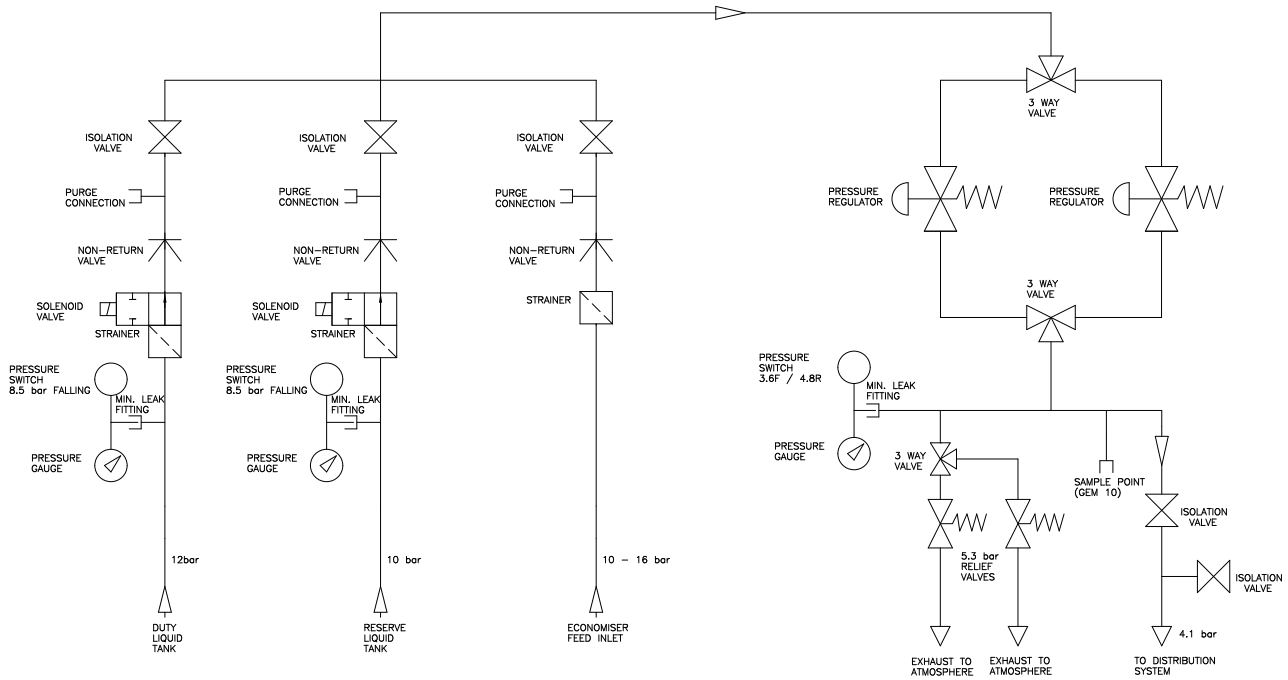
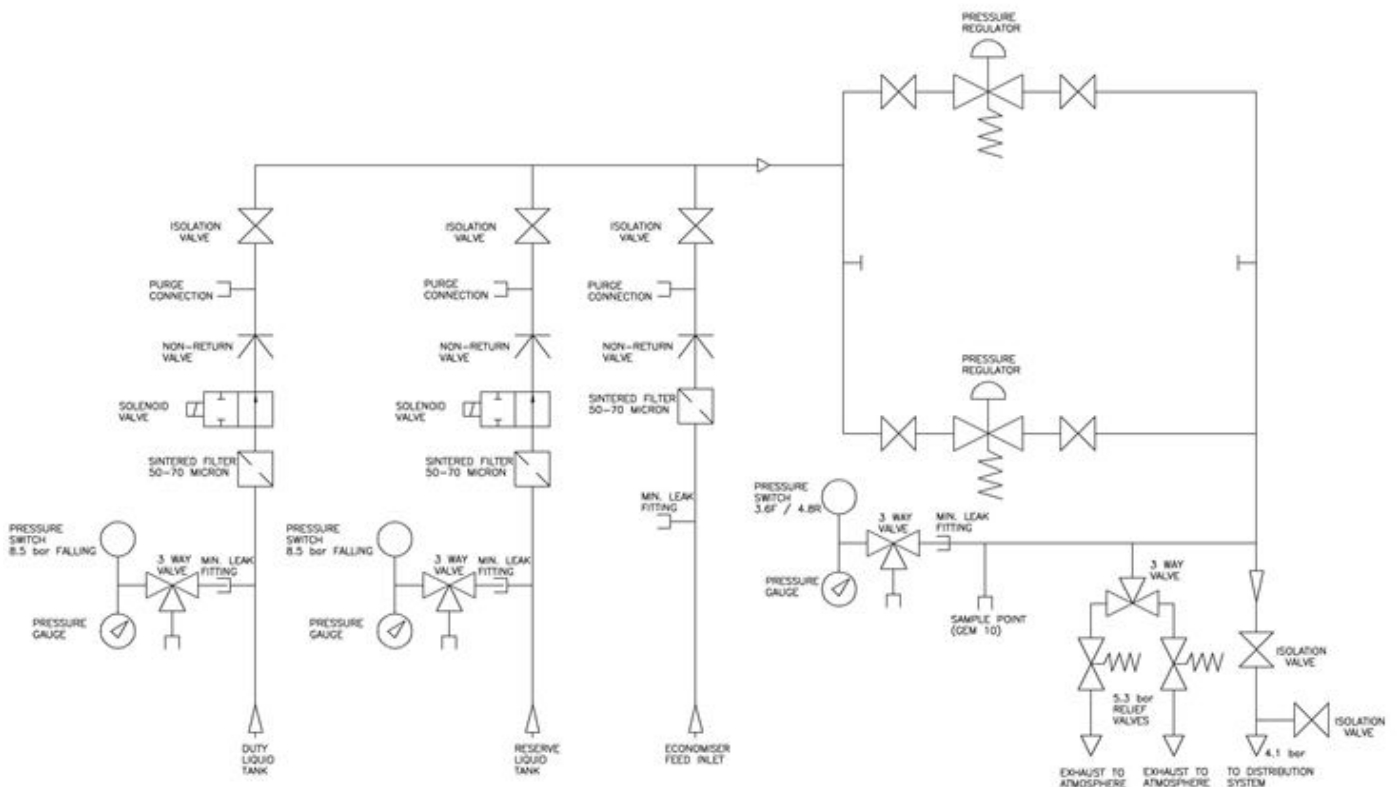
Standard Options

- A steel framed free standing kit shall be available for installation of modular manifold headers where no solid wall construction is available.
- Corner connectors shall be available to enable installation of manifold headers around corners of the manifold room. A custom length corner connector shall also be available to enable header manifolds to be installed in a 'U' configuration across 3 adjacent walls of a manifold room.

CE Marking

The LMCS is DOT, DOT HF & SOT are CE marked with approval from a notified body (more detailed information available on request).

SOT LMCS Installation Proposal - 2x5 and 2x10

SOT LMCS Schematic Diagram


DOT LMCS Schematic Diagram

DOT High Flow LMCS Schematic Diagram


Ordering - LMCS Manifolds and Accessories

Part No	Description	Flow
2002948E	Single O ₂ Tank Panel - Liquid Manifold Control Panel.	1,800 lpm
2003449E	Single Oxygen Tank Control Panel c/w 2x5 standby manifold (tailpipes to be added separately).	1,800 lpm
2003450E	Single Oxygen Tank Control Panel c/w 2x10 standby manifold (tailpipes to be added separately).	1,800 lpm

Part No	Description	Flow
2002947	DOT LMCS2 Low Flow - Dual Oxygen Tank Liquid Manifold Control Panel.	1,800 lpm

Part No	Description	Flow
2005350	Regulator assembly - DOT LMCS2 High Flow (added as an option to the DOT control panel 2005029E to gain extra flow capacity ie 5000 l/m total flow)	1,500 lpm

Part No	Description	Flow
2005029E	DOT LMCS2 High Flow - Dual Oxygen Tank Liquid Manifold Control Panel.	3,500 lpm

Part No	Description
2005907	Outdoor oxygen manifold header (tailpipes to be added separately) - 2x5
2005909	Outdoor oxygen manifold header (tailpipes to be added separately) - 2x10
2002300	Support Stands for Modular Manifolds - 2x4
2002206	Support Stands for Modular Manifolds - 2x5
2002208	Support Stands for Modular Manifolds - 2x10

Part No	Description
103373	KFA6-SR2-EX2.W Amplifier - required for connection to liquid level gauge and medical gas alarms
A02-00-418-3-S	Valves for standalone vaporisers

Part No	Description
2212020815	Manifold Header Corner Connector - one side

Part No	Description
8102371105	1 Cylinder Spare Rack
8102371106	2 Cylinder Spare Rack
8102371107	4 Cylinder Spare Rack
8102371108	6 Cylinder Spare Rack

Part No	Description
8102369663	Oxygen (ISO5145 NS) Tailpipe, 230bar cylinder
8102340110	Oxygen Pin-index (BS EN ISO 407) Tailpipe
8102340111	Oxygen Bullnose (BS 341 No. 3) Top Entry Tailpipe
8102340112	Oxygen Bull nose (BS 341 No. 3) Side Entry Tailpipe
8102340113	Oxygen CGA 540 Side Entry Tailpipe - Short
8102340114	Oxygen CGA 540 Side Entry Tailpipe - Extended
8102340115	Oxygen Chinese Bullnose (5/8" BSP) Top Entry Tailpipe
8102340116	Oxygen Extended Pin-index (BS EN ISO 407) Side Entry Tailpipe
8102340117	Oxygen Extended Bullnose (BS 341 No. 3) Top Entry Tailpipe

