

Technical Specification

Bed Head Unit

Product Description

The CPX bed head unit has been designed with a view to provide smooth lines, a stylish finish and pleasing aesthetics in order to blend into the room décor. The modular design of the unit allows flexibility with a choice of lengths from 1.2 to 6 metres, the length of the unit is determined by the quantity and type of switches and sockets, the number and type of gas outlets and if the provision of a nurse call system is required.

The CPX bed head unit has a number of features including:

Various medical gases available which are delivered from the gas specific terminal units mounted on the bed head unit via a low pressure hose assembly.

The low voltage electrical supply comprises of a number of 13Amp sockets, room and reading lights for the patients and clinical staff.

A protective extra low voltage system can be incorporated which could incorporate a nurse call system or data sockets.

The unit is supplied pre piped with 12mm medical grade copper pipe to the customer's requirements, with piping conforming to HTM2022 standard.

The unit is supplied pre wired to customer requirements with electrical components from a renowned European manufacturer.

The bed head unit incorporates segregation of services as ISO11197:2004, this allows for Protective Extra Low Voltage servicing without isolating Low Voltage circuits.

Materials

The bed head unit shall be constructed from custom designed aluminium extruded sections with 60% gloss finish fascia panels. Fascia panels shall be cut prior to painting to ensure a tight seal between the panels and prevent dust traps.

The bed head unit shall incorporate medical gas terminal units which are constructed of:

1st Fix Assembly

The first fix assembly shall comprise of the following components:

- 1 no. Brass Block Assembly
- 1 no. Retainer
- 1 no. Coding Pin
- 1 no. Flutter Disc (maintenance valve)
- 1 no. 'O' Ring
- 3 nos. Screws

The brass block assembly will comprise of a machined brass block with a 125mm long copper stub pipe to BS EN 1412 R250 brazed into the brass block. The 'O' ring shall be installed on the retainer to provide a 100% seal between the brass block and the retainer. The flutter disc shall enable the second fix assembly and check valve assembly to be removed whilst leaving the pipeline system pressurised. The flutter disc will be manufactured from brass. The appropriate gas identification for each coding position will be machined into the component.

The assembly should be capable of withstanding an inlet pressure on 20 bar.

2nd Fix Assembly

The second fix assembly will comprise of the following components;

- 1 no. Body (Gas Specific)
- 1 no. Locking Ring
- 1 no. Anti-swivel Pin
- 1 no. Gas Identity Label (Gas Specific)
- 1 no. Spring
- 2 nos. Latch Pin
- 2 nos. Allen Head Screw, M4 x 16mm long

The body and locking ring will be moulded from black, fire retardant ABS. The springs, latch pins, anti-swivel pin and allen head screws will be manufactured from stainless steel. Each body will also incorporate a gas specific coding hole to match the coding pin position in the first fix assembly. The relevant gas symbol as defined by BS EN 9170-1:2008 will be moulded into the flange of the body



Check Valve Assembly

The second fix check valve will comprise of the following components;

- 1 no. Valve Body
- 1 no. Valve Plunger
- 1 no. Spring
- 3 no. 'O' Rings
- 1 no. Probe Seal

The valve body and valve plunger will be machined brass components.

The diameter of the hole through the valve plunger that permits the flow of gas shall be not less than the minimum diameter allowed through a probe complying with BS 5682:1998.

The spring will be manufactured from stainless steel. The spring shall not compress when the check valve is under vacuum.

The probe seal will be selected to ensure a gas tight seal when a probe is connected.

The 'O' ring will ensure a gas tight seal when a probe is not connected and the valve plunger is closed.

The valve plunger will be designed to provide a gas tight seal against the probe seal when a probe is not connected in the event of the 'O' ring fail. The probe seal will also ensure that the valve plunger is retained in the valve body if this situation occurs.

Low Voltage Electrical

Low voltage electrical sockets shall be incorporated these shall be wired in a ring main circuit. Any number of sockets can be accommodated depending on the length of the unit with a complete choice of British, American, Euro US or German Schuko sockets available. These sockets comply with the relevant standards for each country and are operated as the relevant standards indicate.

The bed head unit also incorporate an integral general bedroom and reading lights which is also use by clinical staff for night observations. These lights are manufactured to BS EN 60598-2-25 and are designed to protect the patient from glare. Energy efficient fluorescent lamps are used in preference to incandescent lighting to allow more efficient dimming.

Extra Low Voltage Electrical (Communication)

Provision for fitting a nurse call system shall be co-ordinated by the bed head unit supplier. Data sockets, including but not limited to RJ45 and telephone sockets shall be installed in the bed head unit at the time of manufacture.

Definition of Intended Use

The CPX bed head unit is intended to be used to provide services for patient and clinical staff. Bed head units enable the function of clinical and patient non clinical functions at in patient locations. These services incorporate medical gases, power, lighting and a nurse call system if required.

The medical gas terminal unit is intended to be used for the administration of a medical gas from a central supply system via a fixed pipeline in conjunction with other equipment fitted with a probe (quick connector) complying with BS EN 9170-1:2008.

The range of terminal units is suitable for use with the following medical gases;

- Oxygen
- Nitrous Oxide
- 50% Oxygen/50% Nitrous Oxide mixture
- Medical Air
- Surgical Air
- Medical Vacuum

The low voltage power supply is intended to provide power and lighting for patient and clinical staff. An adequate number of 13A twin sockets are installed as part of the bed head unit, to supply electrical power to the various items of non-clinical equipment and obviate the need to use extension leads. The wiring system is selected in accordance with BS7671 wiring regulations.

The bed head unit also incorporate an integral general bedroom and reading lights which is also use for clinical staff for night observations. These lights are manufactured to BS EN 60598-2-25 and are designed to



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protect the patient from glare. Energy efficient fluorescent lamps are used in preference to incandescent lighting to allow more efficient dimming.

The extra low voltage power supply is intended to be used to provide a nurse call system for the patient and staff. This could consist as a patient to nurse non speech call or pear push "follow the light" nurse call to an extensive speech communication system. Data sockets may also be provided within the bed head unit these could include RJ45 sockets (CAT5 or CAT5e) or telephone sockets.

Quality

CPX bed head units are manufactured in the UK under BS EN 13485 Medical Devices: Quality Management Systems. All tube is manufactured under strict quality control procedures to ISO 9001:2008.

CE Marking

CPX bed head units are CE marked as a Class IIb Medical Device 93/42/EEC with notified body British Standards Institute and stamped CE 0086.

Product Cleanliness

The bed head unit is cleaned and degreased for oxygen service and free from all particulate matter and toxic residues in accordance with BS EN 13348:2001 and has a maximum carbon level of 0.2mg/dm². Each assembly is individually end capped and sealed in polythene bags to maintain cleanliness.

Installation Guidelines

To install the bed head unit on the wall:

Remove panels "A" and "B" see fig 1.

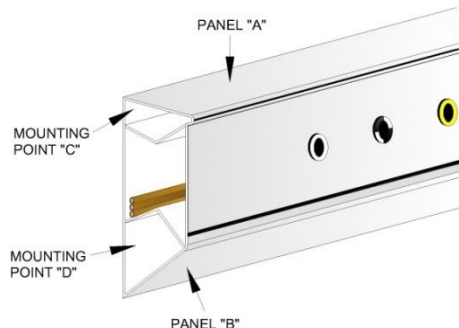
The centre line of the bed head unit should be at a height of 1500mm from finished floor level.

Drill holes in the correct position on wall or backing support to line up with fixing holes in the bed head unit, if required put anchors into the wall.

Check the mounting points "C" and "D" are correct to the holes drilled in the wall and affix the bed head unit using the appropriate screws.

Complete the connections to the medical gas and electrical services. When connections are completed and tested replace panels "A" and "B".

Fig 1



Mechanical

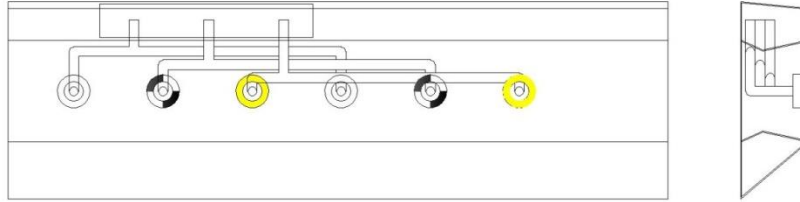
To complete the connections to the pipeline system connect stub pipes to the distribution pipeline system using the appropriate CPX fitting and braze. The copper stub pipe is manufactured to BS13348 for connection to the pipeline system and joints shall be made on site using copper, phosphorus and silver brazing alloy CuP282 to BS EN 17672:2010. Brazing should be carried out using oxygen free nitrogen as an inert gas shield to prevent the formation of oxides on the inside of the pipe.

Check and tighten all mechanical joints.

Pressure test the system. If testing as part of the first fix test, plug the ports.



Typical Gas Duct Layout



Electrical

The CPX bed head units are designed for a voltage supply of 230V-240V 50-60Hz. The power connections are pre-installed from the mains supply to the bed head unit according to the drawing. In addition the earth connections are pre-installed to terminals on the terminal block.

The electrical cabling inside the bed head unit is factory installed and tested for the connection to the site electrical installation.

For the equipment requiring uninterrupted power supply lines (e.g. nurse call) that will be installed on the CPX bed head unit the necessary supply lines should be drawn taking into consideration the necessary length to reach the terminal point within the unit.

Planning, execution and testing of electrical installation must be carried out at the mains by specialist electro-planners and approved specialist electrical companies.

The electrical installation in the room concerned must meet the applicable national specifications. The number of electrical sockets depends on the design of the bed head units, specific to that customer. If several electrical circuits are required these must be taken into account on the terminal blocks.

Multicore connections must be provided with end sleeves for the strands.

Operation

The CPX bed head unit has a number of features with simple operations. The unit is supplied completely assembled and ready for installation.

Terminal Unit

The medical gas terminal unit is to be used for the administration of a medical gas from a central supply system via a fixed pipeline in conjunction with other equipment fitted with a probe (quick connector) complying with BS EN 9170-1:2008.

The range of terminal units is suitable for use with the following medical gases;

- Oxygen
- Nitrous Oxide
- 50% Oxygen/50% Nitrous Oxide mixture
- Medical Air
- Surgical Air
- Medical Vacuum

The terminal unit is used to supply gas to the equipment when the appropriate probe has been correctly inserted and will shut-off the gas supply automatically when the probe is disconnected.

It shall not be possible to connect a probe for a different gas into a terminal unit intended and labeled for another gas.

The terminal units are used to supply gases used during anesthesia for analgesic purposes and to induce narcosis when used in conjunction with an anesthetic machine or trolley.

The terminal units are used to supply the drive gas to support breathing in conjunction with a lung ventilator during anesthesia and in intensive care and-or neo-natal units.

The terminal units are used to supply gas for oxygen therapy in conjunction with flowmeters, nebulizers, humidifiers and facemasks.

The terminal units are used supply air to drive surgical tools used during operations.



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The terminal units are used for the drainage of excess body fluids in conjunction with a suction controller and suitable receiving system.

The terminal units are used in medical engineering workshops for the testing of medical equipment used in conjunction with medical gases.

Medical vacuum terminal units should not be used for the removal of the smoke produced during laser surgery.

Low voltage Electrical Equipment

The low voltage electrical supply comprises of a number of 13Amp sockets, room and reading lights for the patients and clinical staff.

The low voltage power supply is to provide power and lighting for patient and clinical staff. An adequate number of 13A twin sockets are installed as part of the bed head unit, to supply electrical power to the various items of non-clinical equipment and obviate the need to use extension leads. The wiring system is selected in accordance with BS7671 wiring regulations.

The bed head unit has a built in room light which is operated by an on/off switch on the front of the bed head unit.

A patient reading light is also incorporated within the unit which is operated by a pull cord located on the bottom of the bed head unit.

Protective Low Voltage Equipment

Also a protective extra low voltage system can be incorporated within the bed head unit. This could incorporate a customer specified nurse call system. Manufacturers operating and maintenance instructions for the system specified will be provided. Please refer to the manufacturer's instructions for use of this equipment.

Data sockets may be required to allow clinical staff access to the hospital network. Data sockets may also be provided to allow patient access to the internet.

The bed head unit incorporates segregation of services as ISO11197:2004, this allows for Protective Extra Low Voltage servicing without isolating Low Voltage circuits.

Typical Configuration Bed Head Unit.

