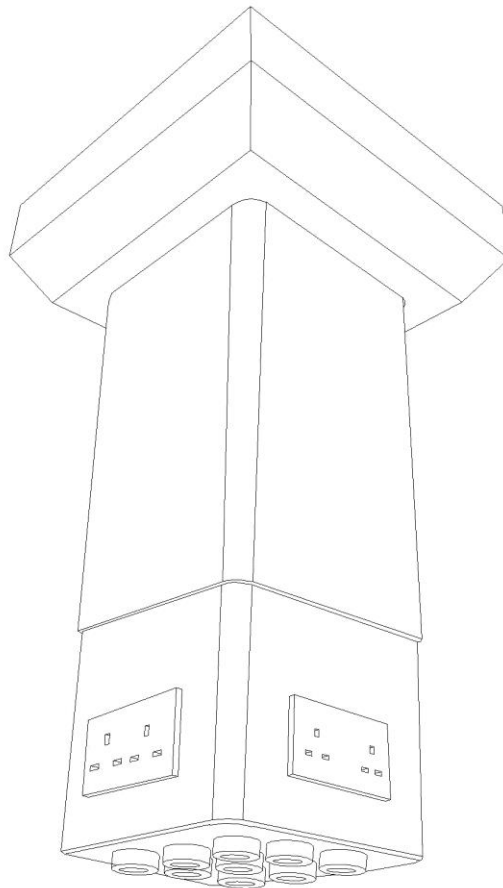


CPX RETRACTABLE PENDANT
INSTALLATION, OPERATIONS &
MAINTENANCE MANUAL



VERSION HISTORY

Version #	Implemented By	Revision Date	Approved By	Approval Date	Reason
1.0	<i>Kevin Pugh</i>	<i>15/08/2013</i>	<i>Rob Parry</i>		<i>1st Issue</i>

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1 INTRODUCTION

1.1 PURPOSE

The purpose of the CPX retractable pendant is to provide services to clinical staff at designated locations including operating theatres. These services can incorporate medical gases, power and data sockets if required.

2 SYSTEM DESCRIPTION

2.1 KEY FEATURES

The CPX Pendant has a number of features including:

- Customer specified medical gases 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 for the staff.
- The unit is supplied pre wired to customer requirements with electrical components from a renowned European manufacturer.

2.2 INVENTORY

The medical gas terminal unit comprises of a Second Fix assembly and Check Valve assembly which are fitted to a First Fix assembly.

The CPX Pedants are designed for a voltage supply of 230V-240V 50-60Hz. The power connections from the mains supply to the pendant are to be pre-installed by others. All internal wiring terminates at terminals on the terminal block.

The electrical cabling inside the retractable pendant is factory installed and tested for easy connection to the site electrical installation.

The pendant incorporates segregation of services as ISO11197:2004.

The retractable pendant is supplied with an attachable remote control which allows the user to raise and lower the pendant to the optimum height for the operation being carried out.

2.3 ENVIRONMENT

The CPX retractable pendant has been designed and built to enhance the working environment of clinical staff whilst undertaking complex and difficult procedures. The CPX retractable pendant has been designed to be a functional, aesthetically pleasing and ergonomic.

2.4 SYSTEM OPERATIONS

The low voltage electrical supply comprises of a number of 13Amp sockets.

Customer specified medical gases are available which are delivered from the gas specific terminal units mounted on the retractable pendant via a low pressure hose assembly.

Hexagon non-interchangeable screw thread (NIST) connectors for the connection to the hose assemblies are available. The CPX Hexagon NIST connectors have been designed with a 15mm copper stub pipe to be soldered directly to the medical gas pipeline system.

Terminal units are available for oxygen, nitrous oxide, 50% oxygen/50% nitrous oxide mixture, medical air, surgical air and medical vacuum, AGSS (anaesthetic gas scavenging system), Carbon Dioxide and Nitrogen.

2.5 SAFETY

- The CPX pendant 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 retractable pendants are not suitable for use in potentially explosive areas.**
- The CPX pendants are intended to carry and position medical devices in non-critical and critical areas of hospitals, to supply these devices with electricity and medical gases. According to the end-user requirements.
- CPX pendants are suitable for continuous duty.
- CPX pendants can be customized with additional fittings for connections to other services like telephone system or intercom system.
- Retractable pendants 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.

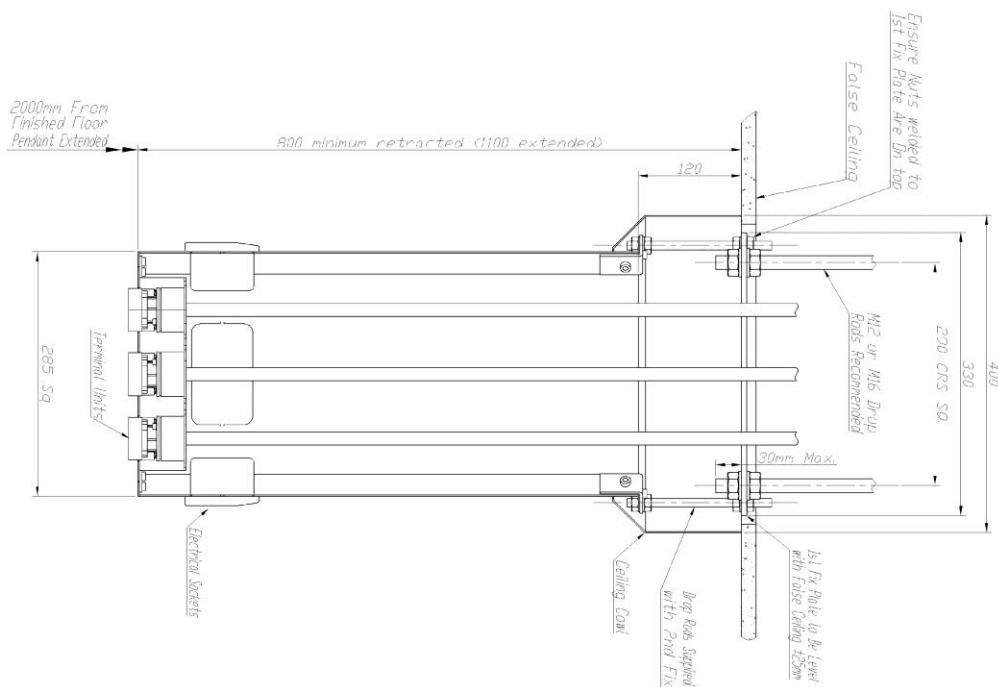
No attempt should be made to use or modify this equipment for use with gas other than the gas identified.

3 INSTALLATION ON THE CEILING

Pendant Mounting instructions

- (a) Secure the M12 or M16 drop rods (not supplied) to the ceiling slab at centres shown in figure 1, using appropriate method.
- (b) Ensure the Nuts welded to the 1st fix mounting plate are on top when fitting to the drop rods.
- (c) Ensure the 1st fix mounting plate is level with the false ceiling when tightened to the drop rods.
- (d) Fit the 2nd fix assembly using the M10 drop rods supplied. Ensuring the terminal units are at the height of 2000mm from finished floor level when the pendant is in the fully extended position.

Figure. 1



3.1 INSTALLATION OF SERVICES

MECHANICAL CONNECTION

To complete the connections to the pipeline system

Precision UK Ltd recommend that CPX hexagon NIST connectors are used for the connection of the retractable pendant to the medical pipeline system. The Hexagon NIST connector is factory brazed with a copper stub pipe and manufactured to BS13348 for connection to the pipeline system. 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 all ports.

LOW VOLTAGE ELECTRICAL CONNECTIONS

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

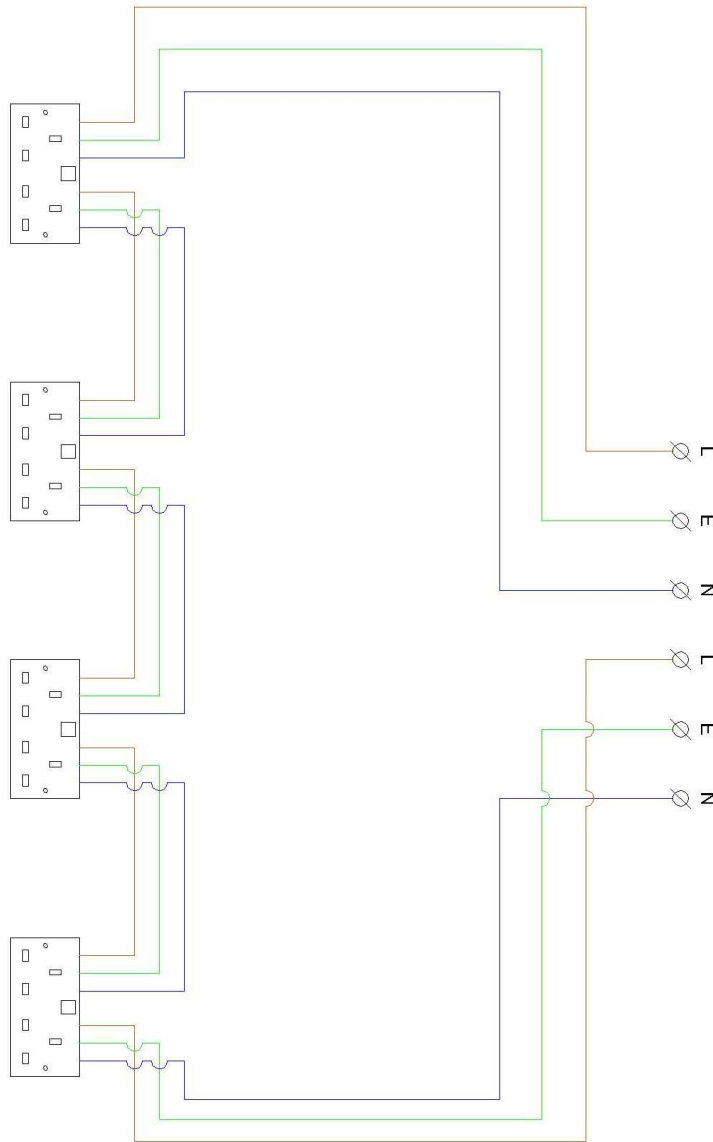
The electrical cabling inside the pendant is factory installed and tested for the connection to the site electrical installation.

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

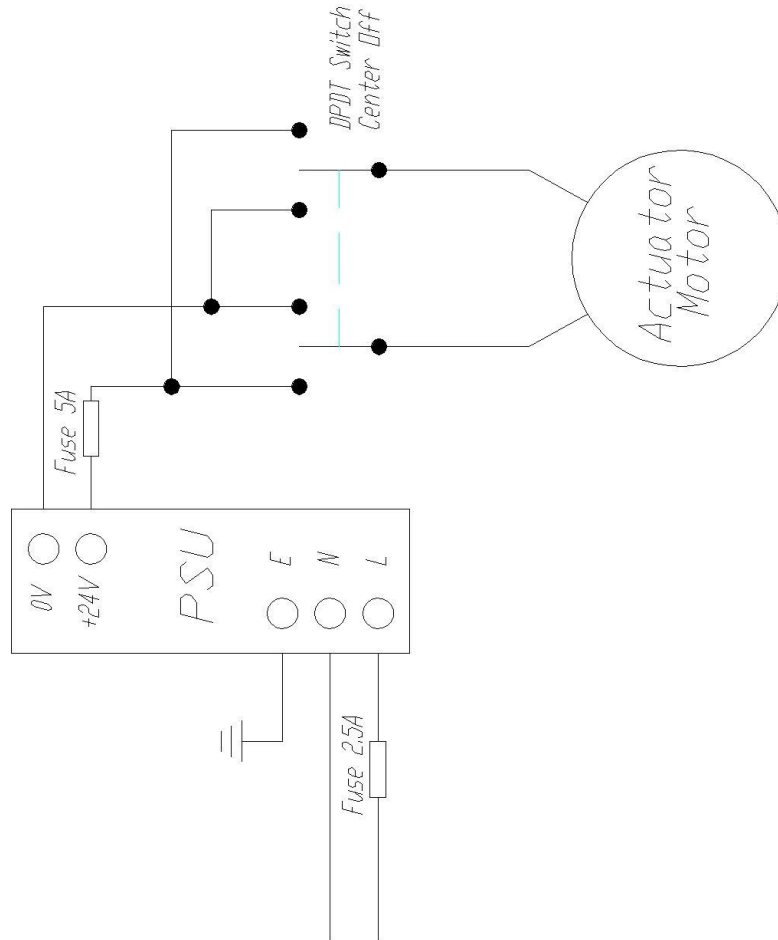
- Planning, execution and testing of electrical installation must be carried out at the mains by specialist electro-planners and approved specialist electrical companies.
- The electrical installation in the room concerned must meet the applicable national specifications. The number of electrical units 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.

Typical Low Voltage Circuit Diagram



Typical Low Voltage Motor Diagram



4 SYSTEM USAGE

4.1 INSTRUCTIONS

The CPX pendant 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
- AGSS (anaesthetic gas scavenging system)
- Carbon Dioxide
- Nitrogen

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 flow meters, nebulizers, humidifiers and facemasks.

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

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

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 for the use by clinical staff during the operating procedure.

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

5 TESTING

Prior to testing the installation, please check the following.

- (a) All components have been installed and tightened.
- (b) The mains power supply has been installed and power is available.
- (c) Ensure all electrical functions are working correctly.

6 COMMISSIONING

Mechanical

- (a) Perform a cross connection test in accordance with HTM02-01
- (b) Slowly open the down steam isolation valve to allow the system to pressurize.
- (c) Check for leaks.
- (d) Confirm the outlets are correctly installed by inserting the correct probe. Confirm the correct identification labels are installed.
- (e) Check the flow and pressure drop at each terminal unit.
- (f) Check the mechanical function of each terminal unit.
- (g) Create a leak and allow the system to de-pressurize.

Low Voltage Electrical

- (a) Perform a dielectric rigidity test in accordance BS EN 7671 wiring regulations.
- (b) Perform an insulation resistance test in accordance with BS EN 7671 wiring regulations.
- (c) Perform an earth continuity test in accordance with BS EN 7671 wiring regulations.

7 MAINTENANCE

Maintenance of the pendant should be restricted to periodic checking as indicated in the preventative maintenance section, 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.

Regular inspections and maintenance of the pendant will prolong the unit's life and reduce the possibility of sudden, inconvenient component failures.

8 PREVENTATIVE MAINTENANCE

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

- Monthly;
 - (a) Visually inspect the retractable pendant for signs of damage.
 - (b) Check all mechanical joints for leaks.

- Annually;
 - (a) Visually inspect the retractable pendant for signs of damage.
 - (b) Check all mechanical joints for leaks.
 - (c) Test the retractable pendant as indicated in section 6 to confirm correct operation.

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

9 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!

Spare parts could be as follows:

1. CPX Hexagon NIST Connector
2. 2nd Fix Terminal Unit
3. Check Valve
4. Remote Control Unit

10 WARRANTY

The CPX pendant 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 totals 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.

11 CONTACT US

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12 REGULATORY REQUIREMENTS

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

- √ BS EN 737-3:2000 Medical gas pipeline systems – Part 3: Pipelines for compressed medical gases and vacuum.
- √ BS EN 1441:1998 Medical Devices. Risk Analysis.
- √ BS EN 13348:2001 Copper and copper alloys. Seamless round copper tubes for medical gases or vacuum.
- √ BS EN 1044:1999 Brazing. Filler metals.
- √ BS EN 980:1997 Graphical symbols for use in the labelling of medical devices.
- √ BS EN 1089:3:1997 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 7396-2 Medical gas pipeline systems. Anaesthetic gas scavenging disposal systems.
- √ ISO 11197:2004 Medical Supply Units.
- √ BS EN 60601-1 Medical electrical equipment general requirements for basic safety and essential performance.
- √ BS EN 60601-1-2 Medical electrical equipment general requirements for basic safety and essential performance collateral standards electromagnetic compatibility.
- √ 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.
- √ HTM08-03 Health Technical Memorandum Bedhead Services
- √ 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.

Appendix A: Operations & Maintenance Manual Approval

The undersigned acknowledge they have reviewed the Retractable Pendant **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: _____
Print Name: _____
Title: _____
Role: _____

Signature: _____ Date: _____
Print Name: _____
Title: _____
Role: _____

Signature: _____ Date: _____
Print Name: _____
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