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## Medical Services Pendants

### Product Description

Medical gas, power sockets, data outlets, nurse call (collectively known as medical services) are required throughout the hospital. Clinical staff need to be able to connect medical equipment to these services wherever patients require it, from regular wards, through intensive care to hybrid operating rooms.

Wall mounted systems, sometimes referred to as bed head trunking, are often found in normal ward applications, where the amount and type of connections required are fewer, more standardised and are not always needed for every patient.

In higher care areas of a hospital, the quantity and type of service connections increases considerably, the need for clinical staff to have easy and safe access to the patient at all times is required and the flexibility of clinical needs is greater.

Ceiling supply systems (commonly known as pendants) are ideal for these applications. By removing the trailing hoses, trailing electrical cables and equipment trolleys from the floor, they remove trip hazards dangerous to both patient and staff, free up space and clinical access around the patient and give greater flexibility by keeping equipment and accessories off the floor. They can also reduce the shock factor that family and friends undergo when visiting high care patients for the first time, by minimising the visual impact of the vast array of medical equipment in use.

Each medical services pendant usually provides many electrical, medical gas and other services at safe recommended heights. They provide the ability to reorganise the clinical workspace to suit the upcoming procedures within minutes moving hundreds of kilograms of equipment ergonomically and safely. The medical services pendants are specified and manufactured dependent on the range of clinical procedures to be carried out.

Our medical services pendants are manufactured to facilitate the installation of Class IIb active medical devices as required by the end user.

Class IIb active medical devices are intended to administer and/or remove a medicinal product (MDR Section 6.4 of Annex VIII - Rule 12)\*.

Both the MDR and the NB-MED Recommendations mention the medical purpose. It is the manufacturer's responsibility to describe the medical purpose of the equipment and this concept is stressed in several guidance documents including the MHRA guidance (MHRA – Borderlines with medical devices).

A medical purpose defined by a manufacturer needs to demonstrate a direct linkage between an ailment, infirmity, medical procedure etc. and the medical benefit provided by the device.

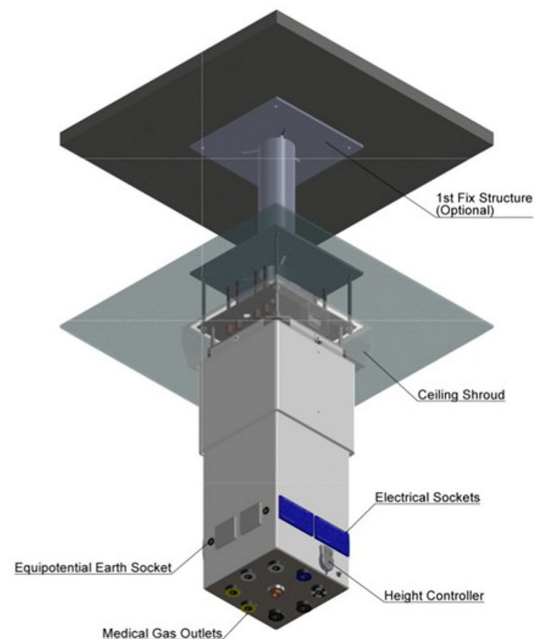
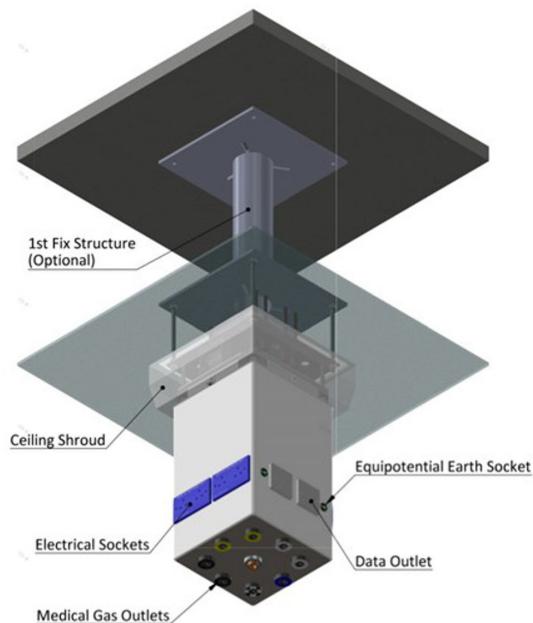
Following comprehensive independent assessments, we have concluded the pendants do offer enhanced ergonomic and safety features. However, they are not assembled with a view to providing any specific medical benefit and, therefore, the pendants do not fall under the scope of the MDR.



## Series 100 Rigid and Series 200 Retractable Medical Services Pendant

**S100** Ceiling mounted rigid pendant as a single square column capable of accepting up to 8 x medical gas plus an AGSS terminal unit and 2 rows of 8 x twin sockets or equivalent (for data, etc).

**S200** Ceiling mounted retractable pendant as a single square column capable of accepting up to 8 x medical gas plus an AGSS terminal unit and 2 rows of 8 x twin sockets or equivalent (for data, etc). with 300mm electrically driven vertical movement controlled via remote hand-switch.



### Manufacture.

Manufactured in the UK, the rigid and retractable medical services pendants are supplied as ceiling support structures, 1st fix assemblies and 2nd fix assemblies.

The ceiling support structure including soffit plate is installed at building construction stage direct to the main concrete sub-structure or alternatively to a primary structure designed to support the pendant.

Alternatively, the pendant can be supplied with the 1st fix plate only and this can be installed to a support frame designed, supplied, and installed by other contractors. The 1st fix plate is installed at false ceiling level.

The 2nd fix pendant can then be installed later in the project when the area has had a builders clean.

Rigid and retractable medical services pendants and their corresponding ceiling shrouds are manufactured from mild steel and finished in anti-bacterial epoxy powder paint (RAL9010).

Both pendant types are designed as a square column with the retractable having a moving inner section capable of a total movement of 300mm.

The retractable pendant can be lowered whilst the connections of the services are made and then retracted up and away above head height. The retraction is motor powered, and control of the movement is by a remote-control switch, which is attached to the pendant by means of a magnetic strip.

### Performance.

Both the rigid and retractable medical services pendants can accommodate any medical gas/electrical service outlets specified by and to the standards required by the client.

To ensure the electrical and gas services are kept separate all electrical cables are housed within flexible conduits which terminate at the 1st fix plate. Electric shrouds present in the column separate the differing services for additional safety.

### Operational Benefits

- Available in a choice of stainless steel or powder coated finish to suit any theatre or room environment.
- Downward facing gas terminal units for quick and easy connection.
- Unique ability to mount 16 socket outlets (8 x 2 gang configuration) around the lower edge of the pendant for improved access.
- Medical rail and hook attachments can be added to support clinical items (Optional).
- Minimal loading on ceiling makes it quick and easy to install.

### Commercial Benefits

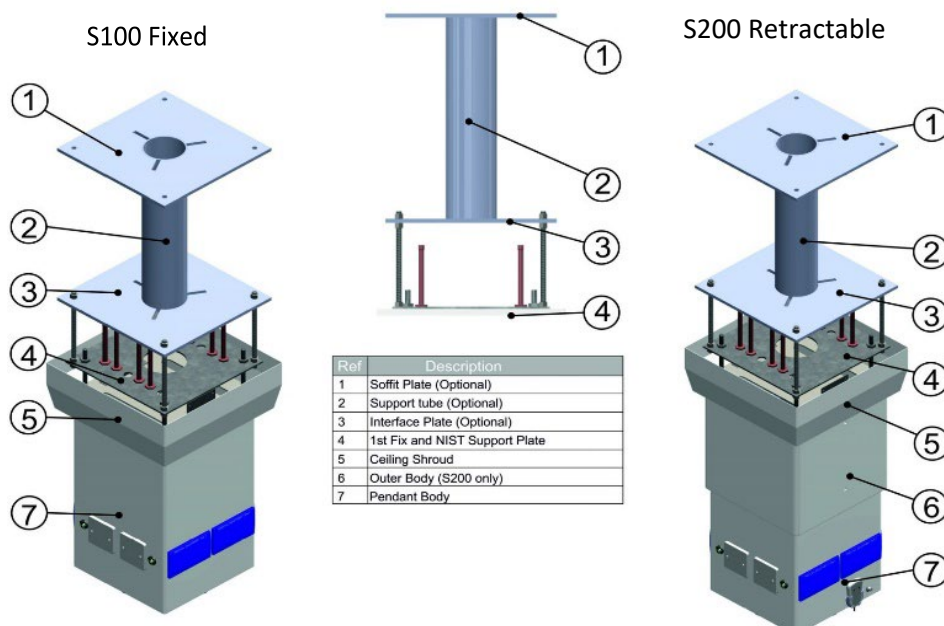
- Low Maintenance.
- Modular design with low lifetime cost.
- UK manufactured with competitive pricing.
- Full installation, commissioning, and service available.

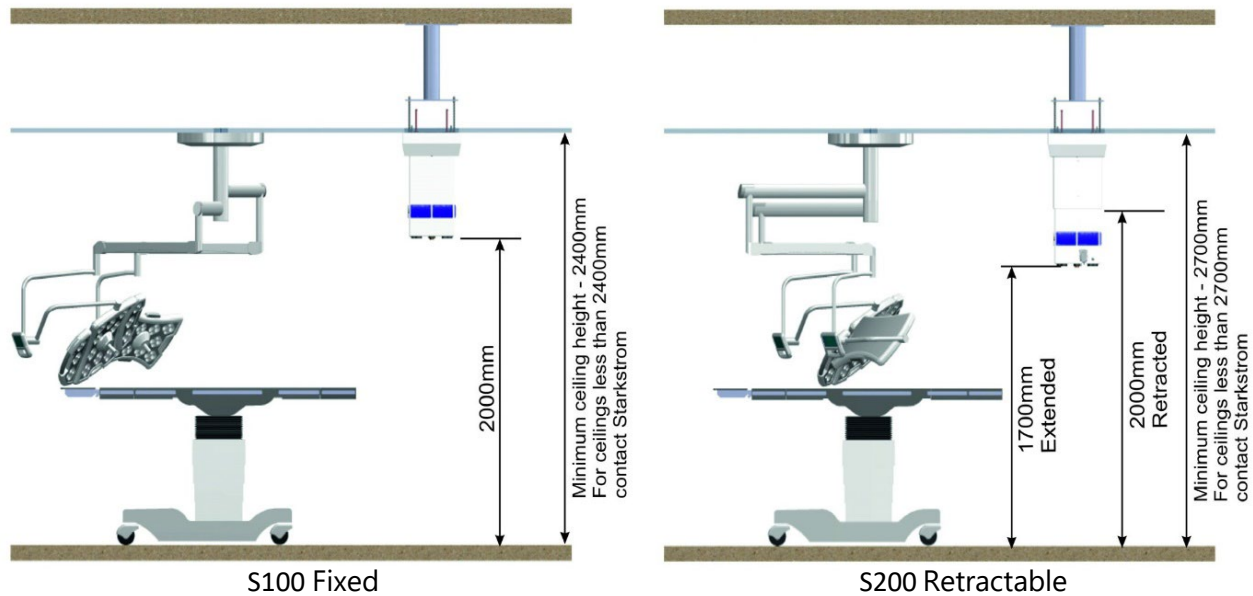
### Infection Control Features

- Anti-Bacterial epoxy powder paint (RAL9010).
- Ceiling mounted systems keeps floor clear and easy to clean.

### Pendant components

The main pendant components are as shown. The pendant can be supplied with or without the soffit plate and support tubes, dependent upon the customer requirements. The 1st fix plate can be mounted onto existing installations, subject to appropriate structural calculations by the architect / structural engineer. It can also be mounted onto secondary structural steelwork again subject to appropriate structural calculations.





### Typical Pendant Head Configuration

The pendant has 4 sides for mounting LV data/TV/telephone outlets/electrical socket outlets and a single stainless steel downward facing fascia for mounting medical gas outlets.

### Options Available for Installing/Mounting on Pendant Head

- Gas outlets, Oxygen, Entonox, Nitrous Oxide, Medical Air, Surgical Air, Vacuum, AGSS, Carbon Dioxide
- Electrical Socket Outlets, Standard, IPS or UPS
- Computer Data Connections
- Equipotential Socket Connections
- AV Sockets
- Telephony
- Nurse Call

### Specification

Operational Temperature range:	10°C to 40°C
Operational Relative Humidity range:	30% to 75%
Electrical socket outlet circuit rating:	230v 16A
Atmospheric Pressure range:	700 to 1060hPa

Painted components finished in Anti-Bacterial matt white epoxy powder (RAL9010) as standard.

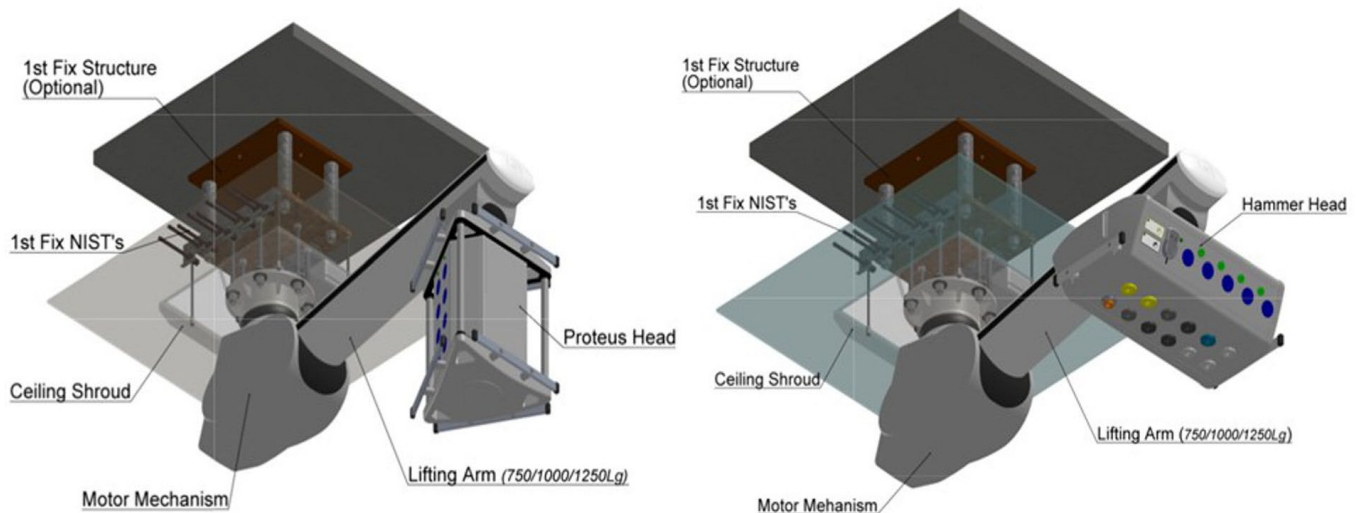
### Pendant Head Capacity

Maximum payload	20 kg, requires additional items and increased cost.
Maximum gas content	8 Gas + 1 AGSS
Maximum electrical content	16 x 13A socket outlets (configured as 8 x 2 gang)
Maximum Extra Low Voltage content	8 x single gang outlet

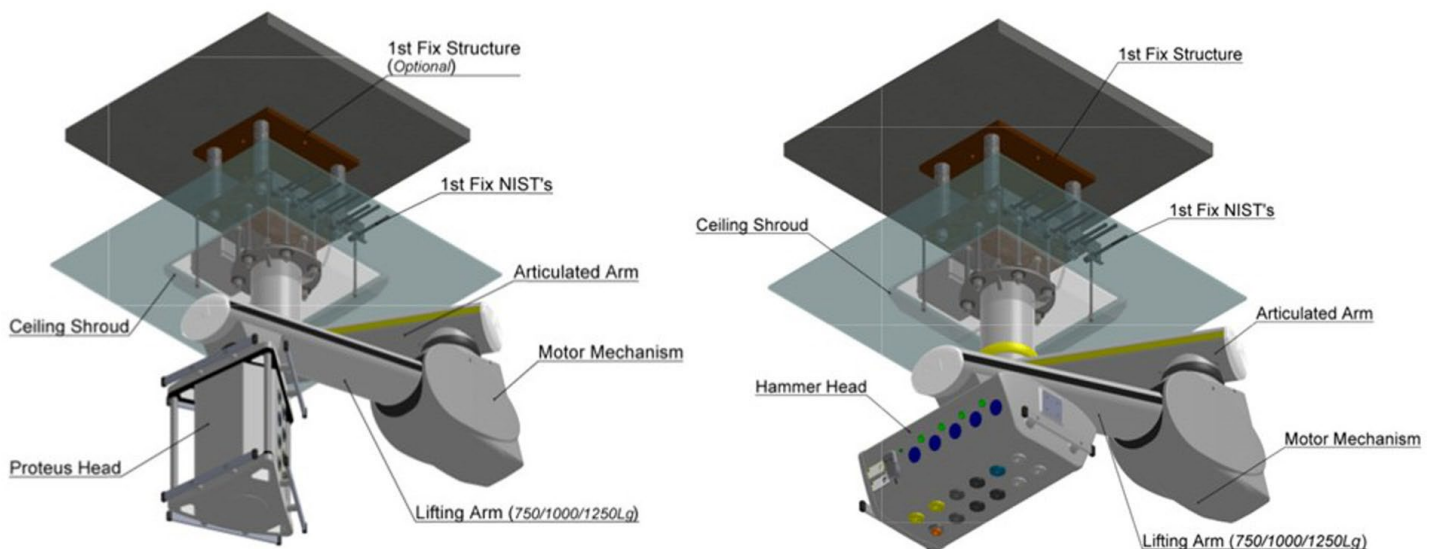


## Series 300 Multi-Movement Medical Services Pendant

Electromagnetically or pneumatically braked, single, or twin (articulated) arm, ceiling mounted lateral and vertical movement clinical services pendant for operating theatres, endoscopy, anaesthesia, and critical care areas. The pendant head can either be a Hammer Head or Proteus (triangular) design.



Series 300 Medical Services Pendant, Proteus, and Hammer Head Arrangements



Series 300 Medical Services Pendant, Proteus, and Hammer Head with Articulated Arm Arrangements



## **Manufacture.**

Manufactured in the UK the Series 300 are supplied as ceiling support structures, 1st fix assemblies and 2nd fix assemblies.

The ceiling support structure including soffit plate is installed at building construction stage direct to the main concrete sub-structure or alternatively to a primary structure designed to support the pendant.

Alternatively, the pendant can be supplied with the 1st fix plate only and this can be installed to a support frame designed, supplied, and installed by other contractors.

The 2nd fix pendant can then be installed later in the project when the area has had a builders clean.

Multi-Movement pendants are manufactured using aluminium extrusion and mild steel sheet and. The external finish is anti-bacterial epoxy powder paint (RAL9010).

A powerful motor with a worm screw drive enables the arm (and pendant head) to be raised and lowered quietly, efficiently, and effortlessly.

The Multi-Movement pendant can be manufactured as a single or an articulated arm unit and is designed to rotate (330 degrees) around its maintenance-free ceiling, arm, and head bearings. The pendant is also height adjustable enabling the pendant to be moved into virtually any preferred position.

Control of the vertical movement is by a 3 position (up-off-down) switch attached to the pendant.

All rotational bearings can be electromagnetically braked or pneumatically braked. In addition, adjustable stops at the bearings limit the rotation.

## **Performance.**

Series 300 multi-movement medical services pendants can accommodate any medical gas or electrical service outlets specified by and to the standards required by the client, including but not limited to:

- Electrical sockets
- Data points
- Equipotential bonding sockets
- Audio/Visual Sockets for integrated theatres
- Nurse call systems

A variety of arm and column lengths are available depending on the procedures and equipment required.

To ensure the electrical and gas services are kept separate all electrical cables are housed within flexible conduits which terminate at the 1st fix plate. Electric shrouds present in the column separate the differing services for additional safety.

## **Operational Benefits**

- Rise and fall facility, can retract above safe head height when not in use.
- Simple colour coded braking system.
- Highly flexible – can be easily and safely repositioned to suit different cases and procedures.
- Neatly managed bed spaces reduce visual impact on patient and visitors.
- Unique triangular services head with integral utility poles allows multiple shelves and accessory mounting on all sides.
- Medical gas, electrical, data, AV sockets and nurse, crash call outlets at a safe operational height.
- Standard and bespoke accessories are available.
- Integral cable management provides a safe and organised environment.
- Freedom from hazards associated with trolley mounted devices.
- Facility to dock or mount OEM ventilators and anaesthetic machines.



### Commercial Benefits

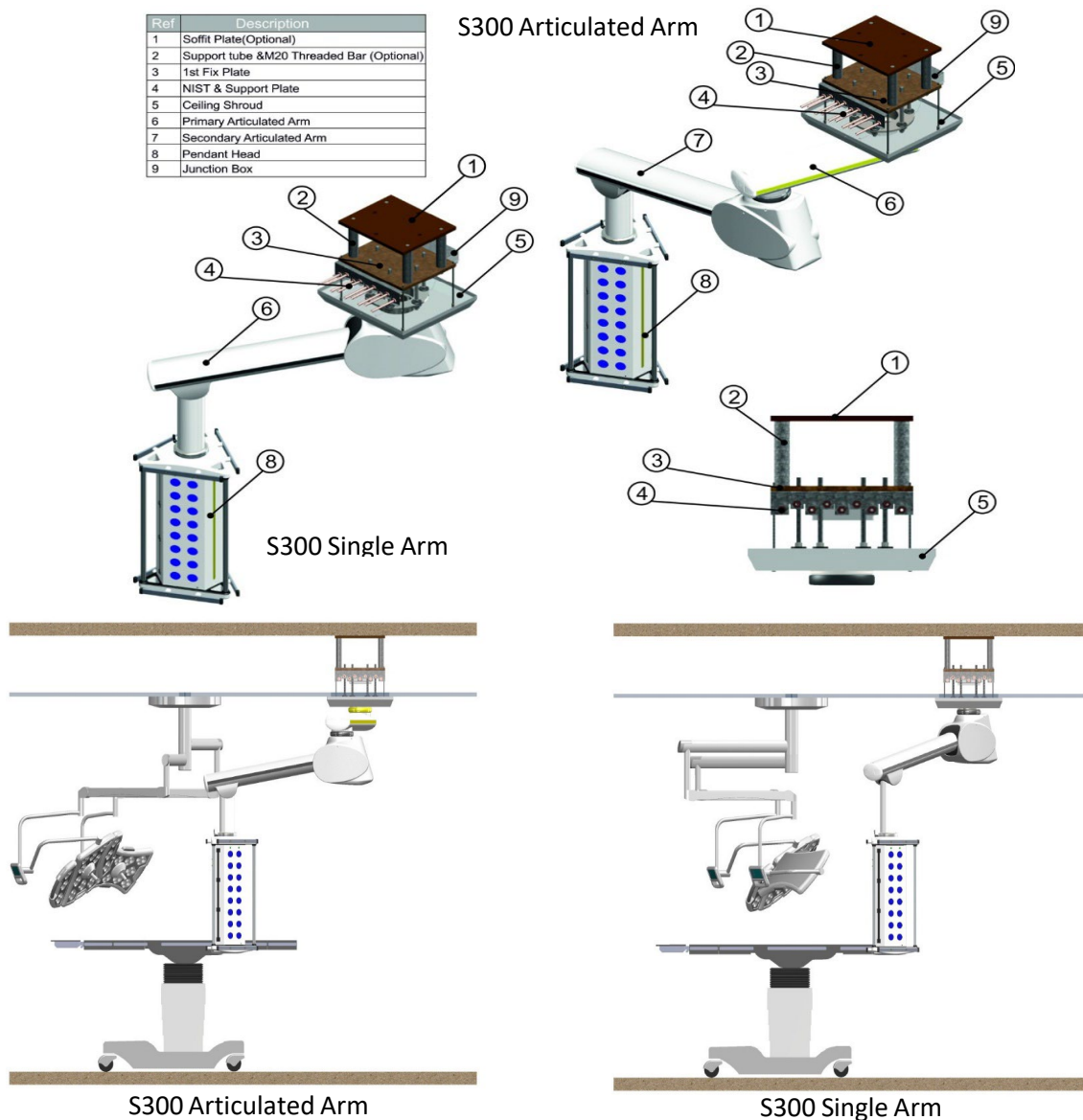
- Low Maintenance requirement.
- Modular design with low lifetime cost.
- UK Manufactured – competitive pricing.
- Full installation, commissioning, and maintenance programmes available.

### Infection Control Features

- Ceiling mounted system keeps floor clear and easy to clean.
- Oval Arm design reduces dust build up and facilitates cleaning.
- Screwless socket and column fascia's.
- Anti-Bacterial epoxy powder paint (RAL9010).

### Pendant components

The main pendant components are as shown. The pendant can be supplied with or without the soffit plate and support tubes, dependent upon the customer requirements. The 1st fix plate can be mounted onto existing installations, subject to appropriate structural calculations by the architect / structural engineer. It can also be mounted onto secondary structural steelwork again subject to appropriate structural calculations.



## Series 300 Specification

Operational Temperature range:	10°C to 40°C
Operational Relative Humidity range:	30% to 75%
Electrical socket outlet circuit rating:	230v 16A
Atmospheric Pressure range:	700 to 1060hPa
Painted components finished in Anti-Bacterial matt white epoxy powder (RAL9010) as standard.	

## Series 300 Variants

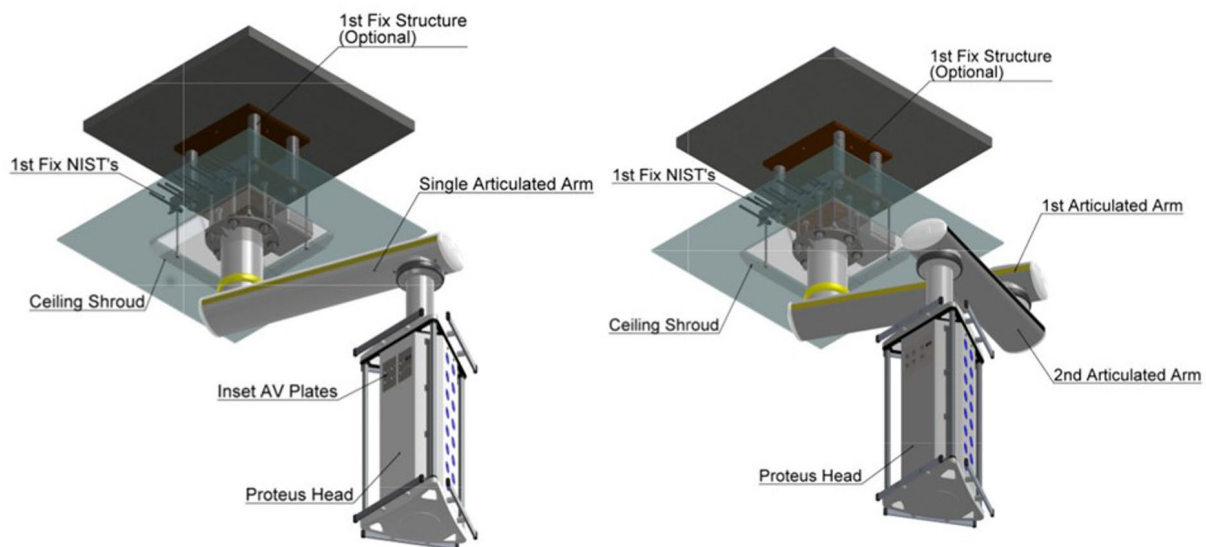
Variant	Primary Arm (mm)	Secondary Arm (mm)	Head Type	Available Load
Single Arm (SD)	750, 1000	X	Hammer Head	X
			Proteus Head	750 = 125kg 1000 = 90kg
Twin Arm (SD)	600, 800, 1000	750, 1000	Hammer Head	X
			Proteus Head	600/750 = 125kg 800/750 = 125kg 1000/750 = 125kg 600/1000 = 90kg 800/1000 = 90kg 1000/1000 = 90kg





## Series 400 Single Arm and Articulated Arm Medical Services Pendant

Electromagnetically or pneumatically braked, single, or twin (articulated) arm, standard or heavy duty, ceiling mounted lateral movement medical services pendant for operating theatres, endoscopy, anaesthesia, and critical care areas. The pendant is equipped with the Proteus Head (triangular) design.



**Series 400 Medical Services Pendant, Proteus Head Arrangements**

### Manufacture.

Manufactured in the UK the Series 400 are supplied as ceiling support structures, 1st fix assemblies and 2nd fix assemblies.

The ceiling support structure including soffit plate is installed at building construction stage direct to the main concrete sub-structure or alternatively to a primary structure designed to support the pendant.

Alternatively, the pendant can be supplied with the 1st fix plate only and this can be installed to a support frame designed, supplied, and installed by other contractors.

The 2nd fix pendant can then be installed later in the project when the area has had a builders clean.

Lateral Movement pendants are manufactured using aluminium extrusion and mild steel sheet and. The external finish is anti-bacterial epoxy powder paint (RAL9010).

The Lateral Movement pendant can be manufactured as a single or an articulated arm unit and is designed to rotate (330 degrees) around its maintenance-free ceiling, arm, and head bearings.

All rotational bearings can be electromagnetically braked or pneumatically braked. In addition, adjustable stops at the bearings limit the rotation.

### Performance.

Series 400 lateral movement medical services pendant can accommodate any medical gas or electrical service outlets specified by and to the standards required by the client, including but not limited to:

- Electrical sockets
- Data points
- Equipotential bonding sockets
- Nurse call systems and Audio/Visual Sockets



A variety of arm and column lengths are available depending on the procedures and equipment required.

To ensure the electrical and gas services are kept separate all electrical cables are housed within flexible conduits which terminate at the 1st fix plate. Electric shrouds present in the column separate the differing services for additional safety.

### Operational Benefits

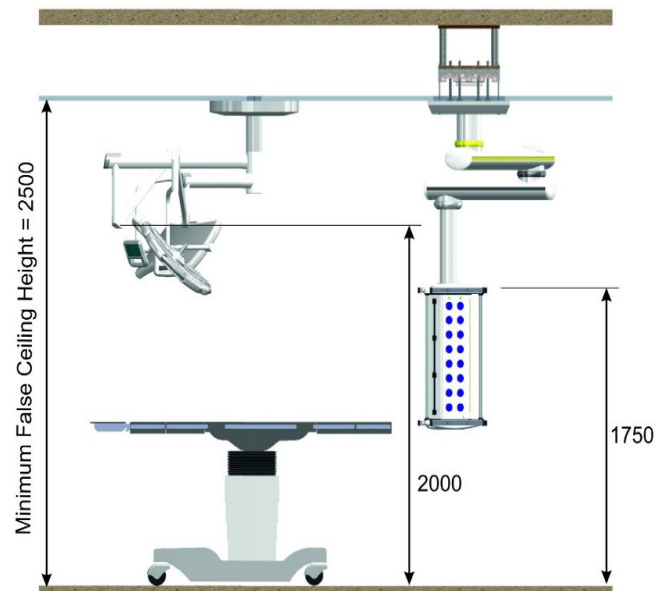
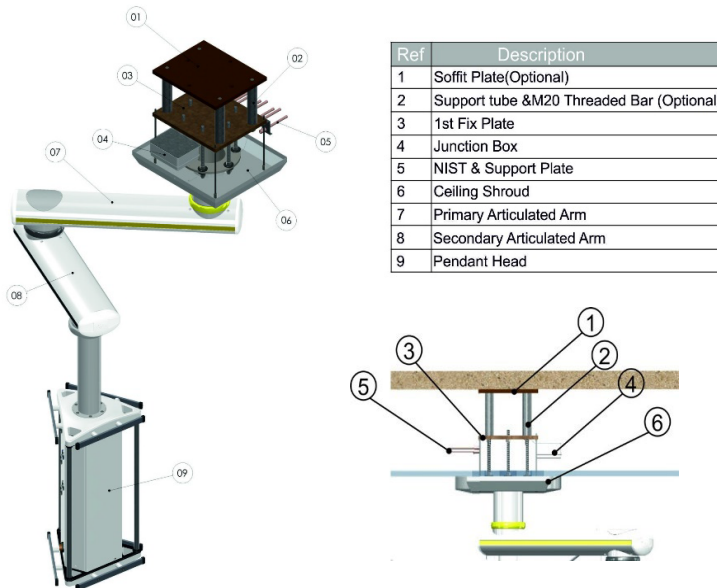
- Simple colour coded braking system.
- Highly flexible – can be easily and safely repositioned to suit different cases and procedures.
- Unique triangular services head with integral utility poles allows multiple shelves and accessory mounting on all sides.
- Medical gas, electrical, data, AV sockets and nurse, crash call outlets at a safe operational height.
- Standard and bespoke accessories are available.
- Integral cable management provides a safe and organised environment.
- Freedom from hazards associated with trolley mounted devices.
- Facility to dock or mount OEM ventilators and anaesthetic machines.

### Commercial Benefits

- Low Maintenance requirement.
- UK Manufactured – competitive pricing.
- Full installation, commissioning, and maintenance programmes available.

### Infection Control Features

- Ceiling mounted system keeps floor clear and easy to clean.
- Oval Arm design reduces dust build up and facilitates cleaning.
- Screwless socket and column fascia's.
- Anti-Bacterial epoxy powder paint (RAL9010).



### Pendant components

The main pendant components are shown above. The pendant can be supplied with or without the soffit plate and support tubes. The 1st fix plate can be mounted onto existing installations, subject to appropriate structural calculations by the architect / structural engineer. It can also be mounted onto secondary structural steelwork again subject to appropriate structural calculations.

## Series 400 Specification

Operational Temperature range:	10°C to 40°C
Operational Relative Humidity range:	30% to 75%
Electrical socket outlet circuit rating:	230v 16A
Atmospheric Pressure range:	700 to 1060hPa
Painted components finished in Anti-Bacterial matt white epoxy powder (RAL9010) as standard.	

## Series 400 Variants

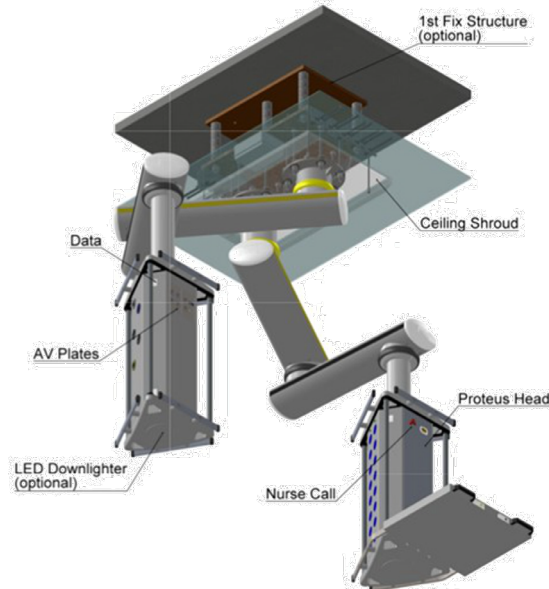
Variant	Primary Arm (mm)	Secondary Arm (mm)*	Head Type	Available Load
Single Arm (SD)	600, 800, 1000	X	Proteus Head	600 = 300kg 800 = 225kg 1000 = 180kg
Single Arm (HD)	600, 800, 1000	X	Proteus Head	600 = 430kg 800 = 325kg 1000 = 260kg
Twin Arm (SD)	600, 800, 1000	600, 800	Proteus Head	600/600 = 150kg 800/600 = 130kg 800/800 = 110kg 1000/600 = 110kg 1000/800 = 100kg
Twin Arm (HD)	600, 800, 1000	600, 800, 1000	Proteus Head	600/600 = 215kg 800/600 = 185kg 800/800 = 160kg 1000/600 = 160kg 1000/800 = 140kg 1000/1000 = 130kg

\* Secondary arm not to be longer than the primary arm



## Series 500 Twin Arm Articulated Medical Services Pendant

Electromagnetically or pneumatically braked, single, or twin (articulated) arm, standard or heavy duty, ceiling mounted lateral movement medical services pendant for operating theatres, endoscopy, anaesthesia, and critical care areas. The pendant is equipped with the Proteus Head (triangular) design.



Series 500 Medical Services Pendant, Proteus Head Arrangements

### Manufacture.

Manufactured in the UK the Series 500 are supplied as ceiling support structures, 1st fix assemblies and 2nd fix assemblies.

The ceiling support structure including soffit plate is installed at building construction stage direct to the main concrete sub-structure or alternatively to a primary structure designed to support the pendant.

Alternatively, the pendant can be supplied with the 1st fix plate only and this can be installed to a support frame designed, supplied, and installed by other contractors.

The 2nd fix pendant can then be installed later in the project when the area has had a builders clean.

Lateral Movement pendants are manufactured using aluminium extrusion and mild steel sheet and. The external finish is anti-bacterial epoxy powder paint (RAL9010).

The Lateral Movement pendant can be manufactured as a single or an articulated arm unit and is designed to rotate (330 degrees) around its maintenance-free ceiling, arm, and head bearings.

All rotational bearings can be electromagnetically braked or pneumatically braked. In addition, adjustable stops at the bearings limit the rotation.

### Performance.

Series 500 lateral movement medical services pendant can accommodate any medical gas or electrical service outlets specified by and to the standards required by the client, including but not limited to:

- Electrical sockets
- Data points
- Equipotential bonding sockets
- Nurse call systems and Audio/Visual Sockets



A variety of arm and column lengths are available depending on the procedures and equipment required.

To ensure the electrical and gas services are kept separate all electrical cables are housed within flexible conduits which terminate at the 1st fix plate. Electric shrouds present in the column separate the differing services for additional safety.

### Operational Benefits

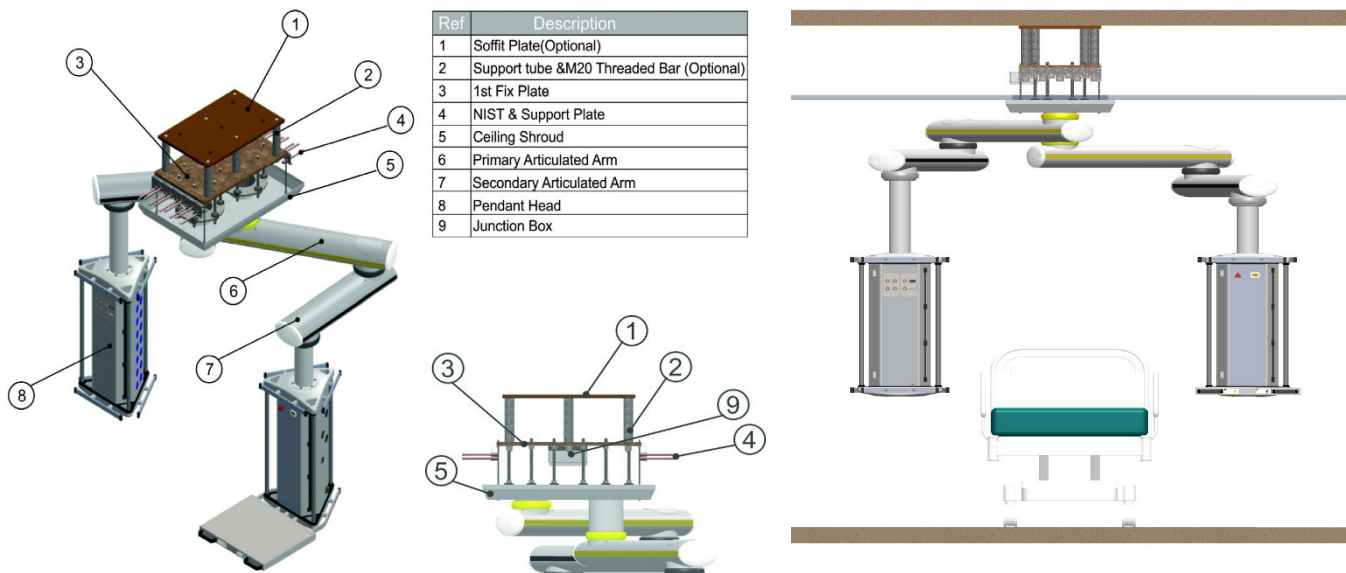
- Defined Wet & Dry side configuration.
- Simple colour coded braking system.
- Provides all round access to the patient including the head area.
- Highly flexible – can be easily and safely repositioned to suit different cases and procedures.
- Unique triangular services head with integral utility poles allows multiple shelves and accessory mounting on all sides.
- Medical gas, electrical, data, AV sockets and nurse, crash call outlets at a safe operational height.
- Integral cable management provides a safe and organised environment.
- Freedom from hazards associated with trolley mounted devices.
- Facility to dock or mount OEM ventilators and anaesthetic machines.

### Commercial Benefits

- Low Maintenance requirement.
- UK Manufactured – competitive pricing.
- Full installation, commissioning, and maintenance programmes available.

### Infection Control Features

- Ceiling mounted system keeps floor clear and easy to clean.
- Oval Arm design reduces dust build up and facilitates cleaning.
- Screwless socket and column fascia's.
- Anti-Bacterial epoxy powder paint (RAL9010).



### Pendant components

The main pendant components are shown above. The pendant can be supplied with or without the soffit plate and support tubes. The 1st fix plate can be mounted onto existing installations, subject to appropriate structural calculations by the architect / structural engineer. It can also be mounted onto secondary structural steelwork again subject to appropriate structural calculations.



## Series 500 Specification

Operational Temperature range:	10°C to 40°C
Operational Relative Humidity range:	30% to 75%
Electrical socket outlet circuit rating:	230v 16A
Atmospheric Pressure range:	700 to 1060hPa
Painted components finished in Anti-Bacterial matt white epoxy powder (RAL9010) as standard.	

Position No. 1				Position No. 2			
Variant	Primary Arm (mm)	Secondary Arm (mm)*	Head Type	Variant	Primary Arm (mm)	Secondary Arm (mm)*	Head Type
<b>S300</b> Single Arm (SD)	750, 1000	X	Hammer Head	TFT	Calculated	Calculated	X
<b>S300</b> Twin Arm (SD)	600, 800, 1000	750, 1000	Hammer Head	TFT	Calculated	Calculated	X
<b>S400</b> Single Arm (SD)	600, 800, 1000	X	Proteus	TFT	Calculated	Calculated	X
<b>S400</b> Single Arm (HD)	600, 800, 1000	X	Proteus	TFT	Calculated	Calculated	X
<b>S400</b> Twin Arm (SD)	600, 800, 1000	600, 800	Proteus	<b>S400</b> Twin Arm (HD)	600, 800, 1000	600, 800, 1000	Proteus
				<b>S400</b> Twin Arm (SD)	600, 800, 1000	600, 800	
				TFT	Calculated	Calculated	X
<b>S400</b> Twin Arm (HD)	600, 800, 1000	600, 800, 1000	Proteus	TFT	Calculated	Calculated	X

\* Secondary arm not to be longer than the primary arm

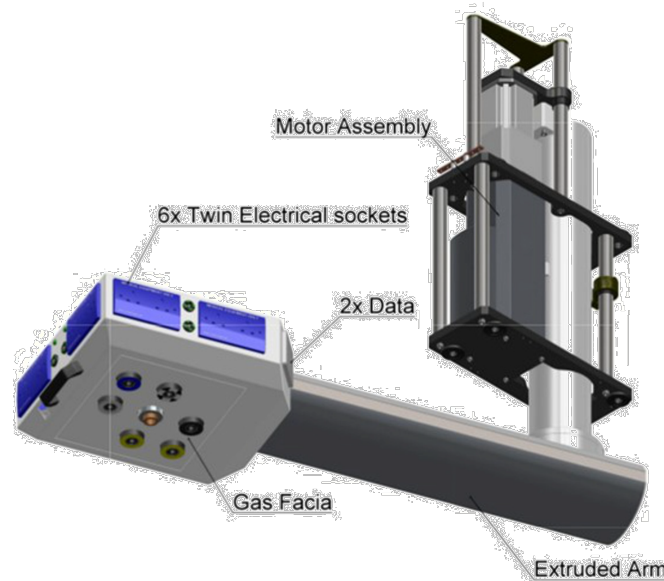


## Series 700 UCV Compatible Medical Services Pendant

Having a rise and fall facility which can retract above safe head height when not in use the UCV compatible pendant system can be either integrally fitted within the return air collar of a UCV canopy or alternatively installed as a standalone solution with extended ceiling cowl arrangements.

The pendant is designed to rotate 270° within the clean zone, or alternatively the rotation stops can be set to allow 270° rotation outside the canopy. Available for UCV canopies with and without side screens.

This solution provides a neat and tidy approach that works with the UCV canopy and eliminates any clashing with UCV side screens.



### Series 700 UCV Compatible Medical Services Pendant Arrangements

#### Manufacture.

Manufactured in the UK the Series 700 are supplied as ceiling support structures, 1st fix assemblies and 2nd fix assemblies, an option of being supplied with a ceiling support structure to fill the void between soffit and false ceiling is available.

The ceiling support structure including soffit plate is installed at building construction stage direct to the main concrete sub-structure or alternatively to a primary structure designed to support the pendant.

Alternatively, the pendant can be supplied with the 1st fix plate only and this can be installed to a support frame designed, supplied, and installed by other contractors.

The 2nd fix pendant can then be installed later in the project when the area has had a builders clean.

Series 700 pendants are manufactured as an articulated arm unit and is designed to rotate up to 270° degrees around its maintenance-free ceiling, arm, and head bearings. Using extruded aluminium for the arms and fabricated steel for the service heads. The external finish is an anti-bacterial epoxy powder coated (RAL9010).

All rotational bearings can be pneumatically, or friction braked via a 4bar or 7bar (using a pressure reduction valve) air supply. In addition, adjustable stops at the bearings limit the possible rotation to 180°.

Where it is being incorporated in a UCV operating room, we recommend the use of positional sensors to avoid clashes with the curtain during raise and lower movements. Control of the vertical movement is by a remote switch, which can either be mounted on the pendant head or as a separate remote switch unit.

### Performance.

Series 700 multi-movement medical services pendant can accommodate any medical gas or electrical service outlets specified by and to the standards required by the client, including but not limited to:

- Electrical sockets
- Data points
- Equipotential bonding sockets
- Nurse call systems and Audio/Visual Sockets

The primary arm length is fixed at 1000mm. To ensure the electrical and gas services are kept separate all electrical cables are housed within flexible conduits which terminate at the 1st fix plate. Electric shrouds present in the column separate the differing services for additional safety.

### Operational Benefits

- Rise and fall facility, can retract to above safe head height when not in use.
- Easy access to gas, power, and data.
- Maximises useable space within the UCV theatre.
- In a UCV theatre the Series 700 can be fitted into the return air collar of the UCV canopy.
- Oval arm design reduces dust build up and facilitates easy cleaning.
- Provides efficient access for medical equipment for both surgeon and anaesthetist.
- Horizontal mounted gas terminal units for quick and easy connection
- 300mm stroke motor.
- Can be fitted with proximity sensor.
- Keeps the floor space clear around the patient.

### Commercial Benefits

- Low Maintenance requirement.
- UK Manufactured – competitive pricing.
- Full installation, commissioning, and maintenance programmes available.

### Infection Control Features

- Ceiling mounted system keeps floor clear and easy to clean.
- Oval Arm design reduces dust build up and facilitates cleaning.
- Screwless socket and column fascia's.
- Anti-Bacterial epoxy powder paint (RAL9010).

### Pendant components

The main pendant components are shown above. The pendant can be supplied with or without the soffit plate and support tubes. The 1st fix plate can be mounted onto existing installations, subject to appropriate structural calculations by the architect / structural engineer. It can also be mounted onto secondary structural steelwork again subject to appropriate structural calculations.

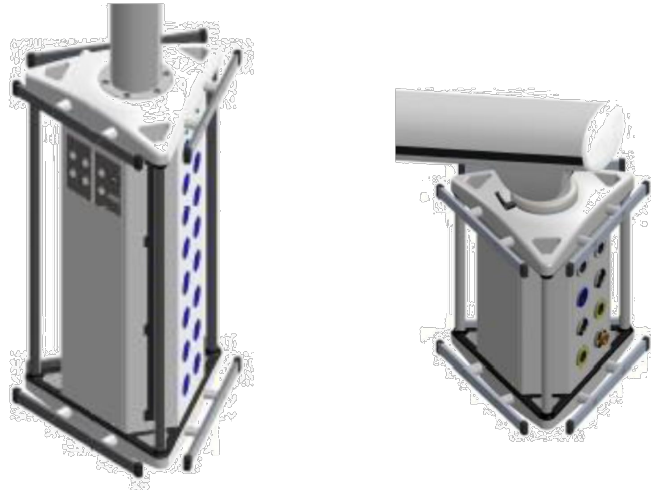
## Series 500 Specification

Operational Temperature range:	10°C to 40°C
Operational Relative Humidity range:	30% to 75%
Electrical socket outlet circuit rating:	230v 16A
Atmospheric Pressure range:	700 to 1060hPa
Painted components finished in Anti-Bacterial matt white epoxy powder (RAL9010) as standard.	



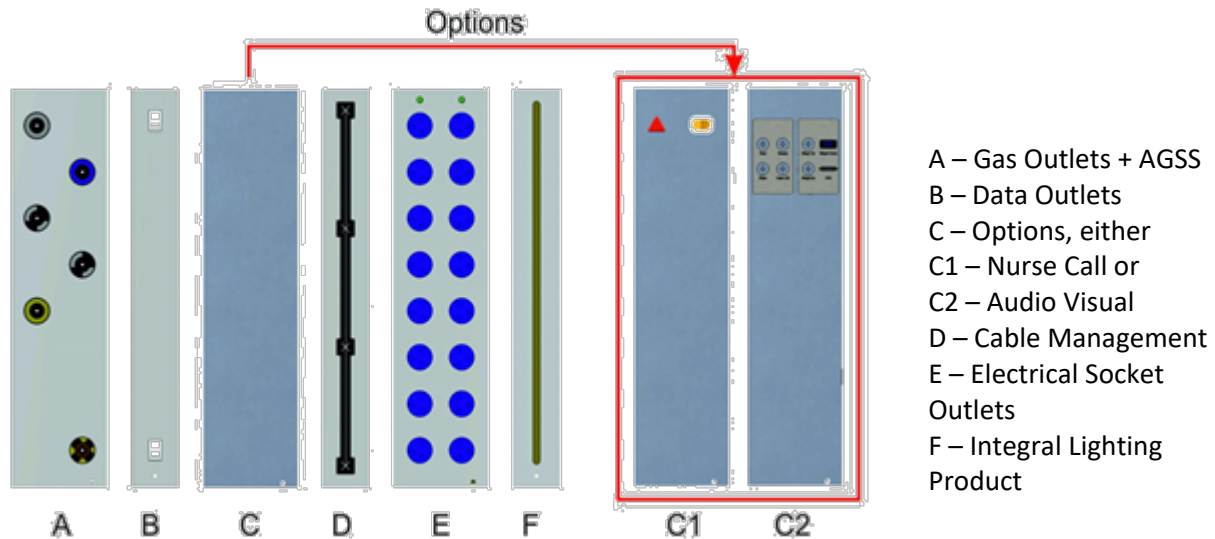
## Typical Proteus Head Configuration

The triangular pendant column is manufactured from a fabricated structural skeleton, extruded aluminium fascia's and injection moulded covers. The column has 3 large fascia's for mounting the medical gas and electrical socket content and 3 smaller fascia's for the mounting of low voltage equipment like data, telephone and TV points.



Chrome plated 25 Ø mm utility poles and Medi-rail are an integral part of the triangular design and enable a multitude of accessories to be installed anywhere on the 3 sides of the pendants. The extruded aluminium pendant column naturally segregates the electrical supplies from the medical gas supplies.

The service has 3 X 180mm wide aluminium fascia's for mounting medical gas / electrical socket outlets and 3 x 90mm wide aluminium fascia's for mounting LV data/TV/telephone outlets.



### Proteus Head Capacity.

The proteus head (depending on the arm / head configuration) can accept, as standard, up to 16 x medical gas/AGSS terminal units, and 16 x single sockets and 12 x data sockets or equivalent.

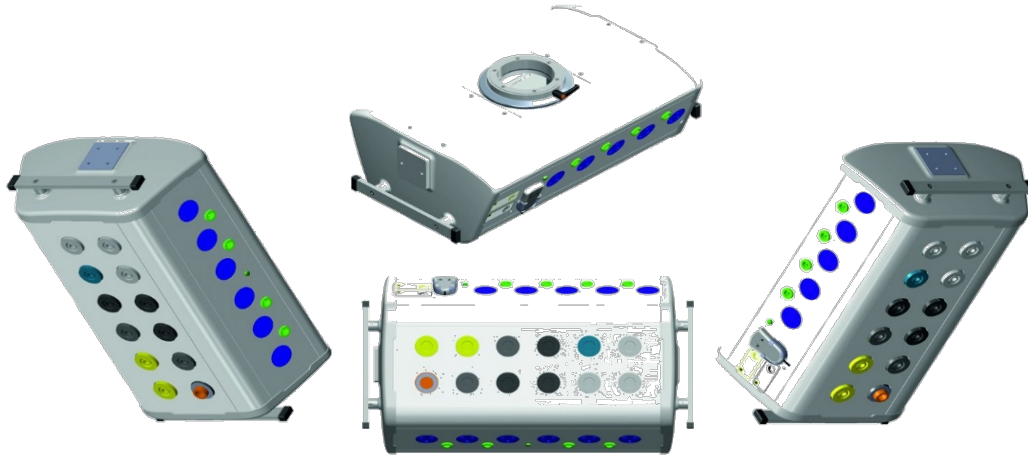
The body comes in 4 different lengths and is manufactured from extruded aluminium, the length will be suitable enough to incorporate the required number of services.

With its unique triangular column design, the proteus head is capable of mounting a wide array of accessories from its 3 x integral 25mm Ø poles and 6 x integral 400mm sections of Medi-rail.



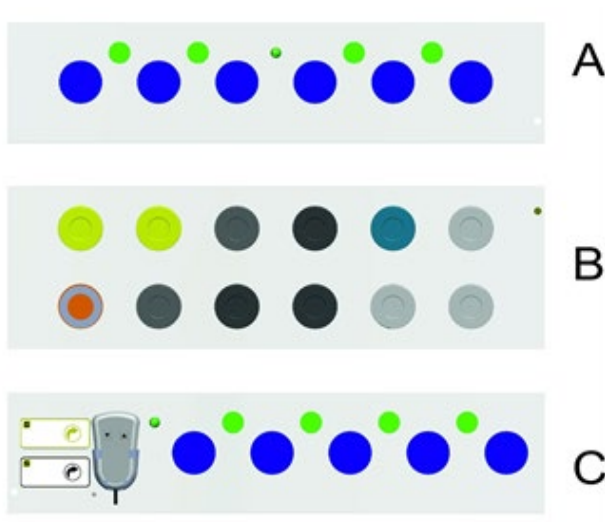
## Typical Series 300 Multi-Movement Hammer Head Configuration

The hammer head body is manufactured from a fabricated horizontal skeleton, extruded aluminium fascia's and end plates. Two Medi-rail bars are mounted on the pendant. They can be used for mounting medical equipment or used for repositioning the pendant.



### Options Available for Installing / Mounting on Pendant Head:

- Medical gas outlets – Oxygen, Entonox, Nitrous Oxide, Medical Air, Surgical Air, Vacuum, AGSS
- Electrical socket outlets – standard, medical equipment only, UPS
- Equipotential socket connectors
- AV sockets
- Nurse call
- OEM ventilators and anaesthesia machines docking
- Various accessory mounts – Medi-Rail, baskets, shelves, drawers, equipment holders.



- A. Electrical Socket Outlets, Data Outlets, Equipotential Sockets
- B. Gas Outlets + AGSS
- C. Electrical Socket Outlets, Pendant raise/lower, Equipotential Sockets, Nurse Call

### Hammer Head Capacity.

The Hammer Head configuration can accept, as standard, up to 12 x medical gas/AGSS terminal units, and 10 x single sockets and 4 x data sockets or equivalent. The pendant head can mount a range of accessories from its two integral sections of Medi-rail.



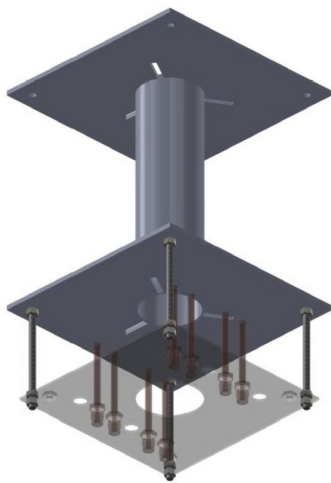


## Ceiling Support Structures

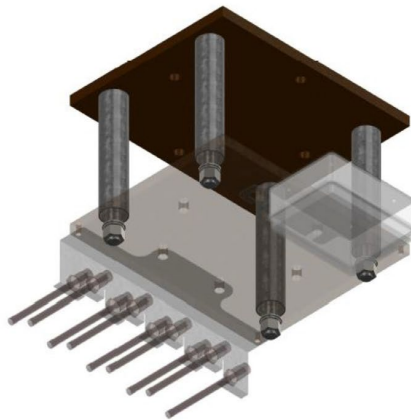
Ceiling support structures are designed to fill the void between the building structure, the soffit, and the false ceiling. The structure usually consists of a soffit plate that is bolted to the main sub-structure, threaded rods and/or steel tube to either an intermediate plate (Series 100/200) or a 1st fix plate (Series 300/400/500). This installation is generally carried out during building construction.

It is always advisable to have an independent structural engineer to verify that the main ceiling structure will safely support the weight of the pendant, accessories, and the ceiling support structure.

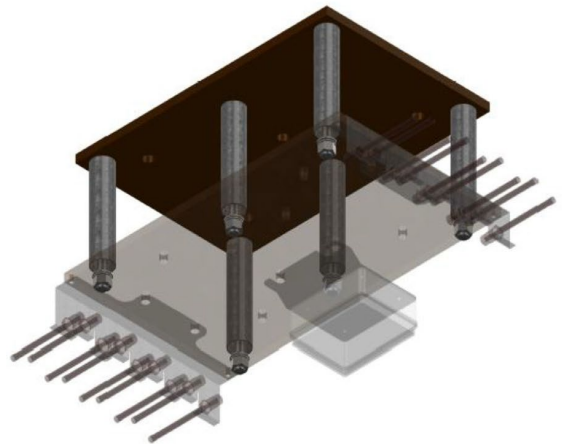
There may be instances where the main structure has not been designed to withstand the loads now seen with some of the larger more complicated pendants. In these instances, it is recommended that a steel structure is designed to span the ceiling so that the pendants can be safely supported in the correct position to ensure the efficient use of the pendant



**Series 100/200**



**Series 300/400**



**Series 500**

There are 3 distinct structures in existence, 1 for each of the pendant types, and are usually quoted up to a maximum length of 1000mm. Should the ceiling void span more than 1000mm, we can provide special structures that are designed for the additional loads.

## 1st Fix Plate Assemblies

1st fix plate assemblies are usually installed in line with the false ceiling (Series 100/200) and 200mm above the false ceiling (Series 300/400/500) and house the medical gas 1st fix NISTs (Series 100/200/300/400/500) and electrical junction boxes (Series 300/400/500).

The 1st fix plates are delivered and installed during the building construction phase along with the 1st fix NISTs (if required) and junction boxes. All field connections are then made by the on-site medical gas and electrical contractors.

The plates are required to be installed to a ceiling support structure. This can be supplied by Starkstrom or by the main contractor.

A ceiling cut-out is required to enable the pendant to be installed and maintained after the false ceilings have been installed. Provision of access hatches in the ceiling would provide further and more ergonomic maintenance access.

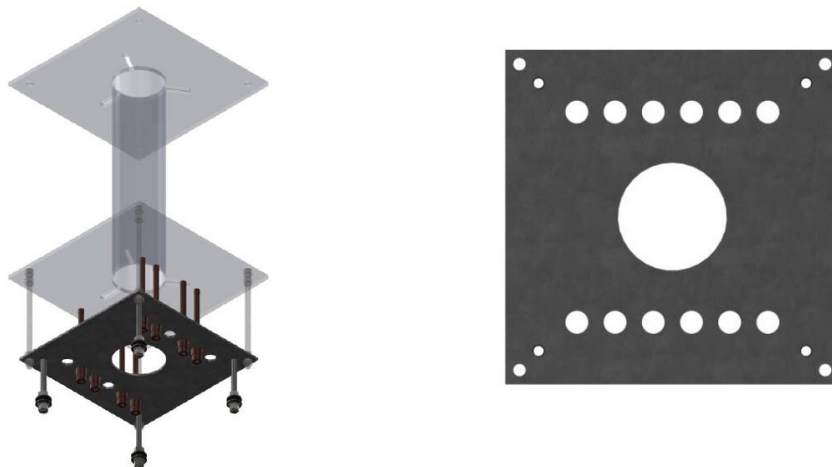
The pendants are attached to the 1st fix plate during the later stages of construction by way of drop rods which allow the pendants to be levelled. The drop rods also allow some minor adjustment if the 1st fix plate has been installed too high or low.

There are 3 types of 1st fix plates for the pendants: Series 100/200, Series 300/400 and Series 500

### Series 100/200 1st Fix Plate Assembly

A 5mm thick rectangular plate is installed at the false ceiling level. The medical gas NISTs if required are located into the holes of the 1st fix plate and point vertically down. The electrical junction boxes are mounted onto the top of the 2nd fix pendant assembly and as such, are wired in during the 2nd fix installation.

The 4 x Ø13 holes are used for securing the 1st fix plate to the ceiling support structure. The pendant is installed to the 1st fix plate by way of 4 x 12 mm threaded drop rods when the area is builders clean.



**Series 100/200 1st Fix Plate and assembly**

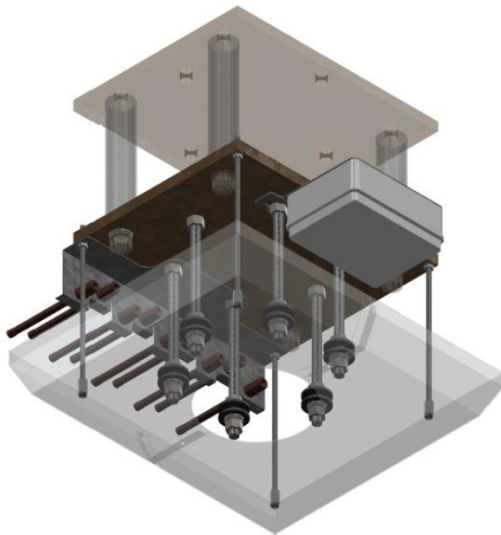
### Series 300/400/500 1st Fix Plate Assembly

A 10mm thick rectangular plate is installed 200mm above the false ceiling level. The medical gas NISTs, if required, are located on a NIST bracket that is bolted to the main 1st fix plate and are installed parallel to the false ceiling. The electrical junction boxes are also mounted to this plate and as such, are wired in during the 1st fix installation.

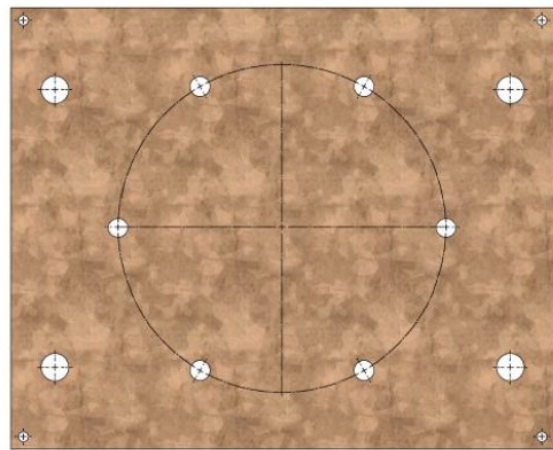
The Ø22 holes (4 x Series 300/400 and 6 x Series 500) are used for securing the 1st fix plate to the ceiling support structure.

Should a combination pendant including a HD (heavy duty) pendant be required, the ceiling support structure soffit plate and 1<sup>st</sup> fix plate will be thickened accordingly.

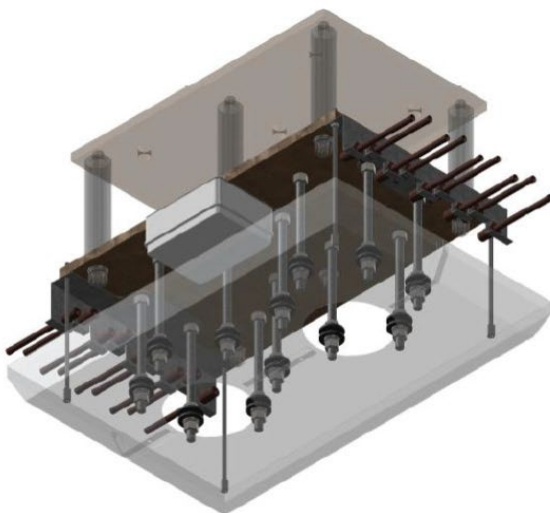
The 2nd fix pendant assembly is installed to the 1st fix plate by way of 6 x 16mm threaded drop rods when the area has had a builders clean.



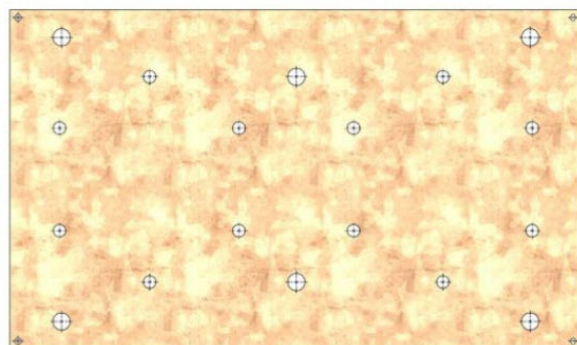
**Series 300/400 1st Fix Plate Assembly**



**Series 300/400 1st Fix Plate**



**Series 500 1st Fix Plate Assembly**



**Series 500 1st Fix Plate**

## Product legislation and standards of conformity

EU Ref	EU Title	UK Ref	UK Title
2014/ 35/EU	Low Voltage Directive	2016/ 1101	Electrical Equipment (Safety) Regulations 2016
2014/ 30/EU	Electromagnetic Compatibility Directive	2016/ 1091	Electromagnetic Compatibility Regulations 2016
2011/ 65/EU	Restriction of Hazardous Substances (RoHS) Directive	2012/ 3032	The Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment Regulations 2012
2009/125/EU	Eco-design Directive	2010/ 2617	The Eco-design for Energy-Related Products Regulations 2010

Reference	Title	Edition
EN ISO 11197:	Medical supply units	2019
EN ISO 19054:	Rail systems for supporting medical equipment.	2006 + A1:2016
EN ISO 14159:	Safety of machinery - Hygiene requirements for the design of machinery	2008
EN 60204-1:	Safety of machinery. Electrical equipment of machines. General requirements	2018
EN 61000-6-1	Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for residential, commercial and light-industrial environments	2019
EN 61000-6-3	Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for residential, commercial and light-industrial environments	2021
EN IEC 63000	Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances	2018
HTM 02-01 Part A	Health Technical Memorandum 02-01 - Part A: Medical gas pipeline systems.	2006
HTM 06-01 Part A	Health Technical Memorandum 06-01 - Part A: Electrical services supply and distribution.	2017

\*(Page 1) MDR Annex VIII, Rule 12, Section 6.4 Refers.

