

Cableflow RO

Dialysis Equipped BEDHEAD SERVICES TRUNKING SYSTEM

The **CABLEFLOW RO** range of product has been developed specifically for dialysis station locations in a healthcare environment where the safe and reliable provision of purified water systems is essential to the provision of care. These systems are broadly recognised as the leading types of containment available to the UK market and meet the intent of UK Health Building Note 53:2004.

The **CABLEFLOW RO** range offers a composite solution to bedhead services provision in Dialysis or Renal Dialysis areas where both the clinical efficiency of the environment and it's aesthetics are important to users and patients alike. These products have evolved through ongoing dialogue with RO water system providers, users and specifiers alike.

Varying configurations of product can provide basic dialysis media panels or, the combined scope of all bedhead services. Each product has been specifically developed for containment of RO system pipework and waste disposal, with single or multi-station capabilities. Designed to suit the specific custom application from a core product range, they are manufactured to an uncompromising standard which caters for the individual needs of dialysis positions in every type of healthcare environment.

Products can be specified in a variety of colours and configurations with more than 360 shades or hues available from our standard range, so it won't look out of place in any environment. With the added features of wood effect and foil laminate coverings to our enclosures the environment can take-on the appearance of a stylish yet homely feel.



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Design

Water is an important factor in the cost of haemodialysis and the provision of a safe and reliable patient environment.

How that provision arrives safely and neatly at the workstation is critical to the overall service provision. Whether that's from a centrally located renal water treatment plant or localised purified water system. The **CABLEFLOW RO** containment systems have been designed for all situations from single chair/bed stations to multi-chair/bed rooms.

Whether the environment process is specific for Haemodialysis, Peritoneal Dialysis or Hemofiltration each of our RO products can be applied to accommodate every aspect or, as is often the case, a multi-purpose installation can be installed from the outset thus providing total flexibility in the resource.

The **CABLEFLOW**'s range of medical trunking systems have been proven to offer solutions in a neat, compact, versatile and cost-effective manner. The **CABLEFLOW RO** range adds to the versatility of our product group by ensuring that RO pipework and it's associated media panels are contained in aesthetically pleasing yet fully compliant enclosures which can all be manufactured and tested off-site, thus allowing quick and simple installation. Specifying The **CABLEFLOW RO** range provides you with the ability to resolve almost any design or site constraint likely to be encountered.

Dependent upon which option is specified, each trunking system can be subdivided into up to five compartments for services such as SELV, ELV, Mains, RO pipework and medical gas services, all as required by the latest edition of BS EN ISO 11197:2004. The unique design of our products means that separate chambers are created for piped medical gas services and the RO system pipework and media panels. A variety of system sizes are available within the range to accommodate the varying quantities of pipework (inc insulation) and cabling required.

Flush fitting lids and cover plates offer a clean appearance to the fascia, enhanced by a screw free approach to all external surfaces, as required by HTM 08-03. The uncluttered appearance of the fascia ensures that both staff and patients can quickly identify the service they require, resulting in efficient patient care.

This, added to our belief that trunking should be not only functional but attractive too, means that specifying a **CABLEFLOW RO** trunking solution will provide an easy to use and ergonomically structured solution while maintaining a uniform look with other in-patient areas where our systems might be installed.

Services Outlets

Accessories are mounted directly onto lids and plates to allow simple maintenance. The standard design of our horizontal trunking systems ensures a degree of flexibility and, if necessary, adaptability on site.



Accessory locations ensure total segregation, yet more importantly, 'screening' between services at outlet positions.

Nurse call locations are similar in construction and allow for the location and mounting of the nurse call system circuit boards and any associated components. As we have the ability to accommodate a variety of nurse call systems within our products we are well-educated at accommodating the various PCB mountings which has been developed in conjunction with the various nurse call system manufacturers to ensure uniformity and compatibility.

Where the **MEDICOL RO-V**, **RO Satellite** and **RO Evo** vertical solutions are specified then segregation is achieved to ensure full compliancy via the internal construction of each system.

Mains Power

Electrical sockets from the UK, continental Europe, the US and other geographical regions can be accommodated, including switched or unswitched socket outlets for standard or non-standard configurations.

These can be colour co-ordinated if required subject to the respective manufacturer's product range. The design of the **CABLEFLOW RO** range ensures that no screw fixings are visible on the trunking lid and this applies to all flush mounted outlets, thus complying fully with the requirements of HTM 2015.

TV/Data Services

TV, data, fibre optic and voice services for IM&T can all be accommodated within the **CABLEFLOW RO** range.

Provision for Mod-Snap or Euro-mod style Data or Voice sockets, co-axial TV jacks and fibre-optic services can all be catered for.

These can be colour co-ordinated subject to the respective manufacturer's product range. As, with our mains sockets, no screw fixings are visible on the trunking lid.

Nurse Call Systems

Each hospital will vary in its individual requirement from the next, none more so than the nurse call system.

The **CABLEFLOW RO** range has been designed specifically to accommodate all commercially available nurse call products. As an independent trunking manufacturer with no allegiance to any specific nurse call supplier, we leave the choice of nurse call manufacturer up to you, the user and specifier. The trunking lids and plates are supplied free issue from us

to the nurse call manufacturer, pre-punched, coated and engraved (as appropriate) for them to assemble their components onto and test in-house. This in itself ensures compatibility between the two manufacturers, whilst ensuring that product integrity, quality and performance are maintained.

Often when a client states a particular preference for

bedhead services, this invariably refers to the nurse call system to ensure compatibility with existing arrangements. Our systems are universally used with all major nurse call systems and do not affect the choice of nurse call equipment which can still remain as the hospital norm.





Medical Gas Terminal Units

As with the nurse call provision, the **CABLEFLOW RO** range is capable of accommodating all types of medical gas terminal units, each hospital or installer having a preference for a particular type.

Gas pipelines and terminal units are fully segregated from cabled services and so gas terminal outlets can be positioned almost anywhere within the module. The number of gas specific terminal units which can be fitted varies depending on the exact product selected, but any variation of up to nine terminal units from the full range of medicinal gases as defined within HTM 02-01 (formerly HTM 2022) can be accommodated in our larger profiles.

Media Panel

Each system within the **CABLEFLOW RO** range has been developed to accept various types and styles of Media Panels from the leading RO water system providers.

Alternatively, we have developed our own uniform multi-outlet Media Panel designed to accept each

manufacturers selected quick release couplers. In this instance each quick-connector coupler is angled downwards at 30° so as to prevent the entry of crystallised concentrate (when used) into the enclosure. Any droplets which may result during disconnection will not affect the durable powder coat finish.

Each Media panel location also includes a built in access hatch to ensure full accessibility for “full bore” maintenance and monitoring even when the dialysis station is in use. By ensuring uninterrupted fluid flow during maintenance this allows cursory and routine maintenance checks on hoses, pipelines and waste outlets to be performed during dialysis.

The design of the waste outlet drain ensures that any overflow of toxic waste by-product resulting as a consequence of undetected blockages is directed out of the enclosure via the media panel air gap as opposed to allowing waste residue to form inside the Media panel enclosure.

Invariably, pipelines will be installed in cross-linked polyethylene (PEX) or Stainless Steel by the RO water

system provider on site. Rear internal support straps ensure a dedicated pipeclip location for supply pipelines whilst variable clip positions are provided at a lower level to accommodate the ongoing fall of the waste pipeline.

Careful consideration of heat disinfection properties and associated component expansion characteristics have been taken in to account although, the intention to use either CleanPEX or stainless steel should be determined at the design stage.

Pipe Clips

From our experience and the comments of the medical gas pipeline installers, the need to install and maintain a pipework system with simplicity, we view as being of paramount importance.

The unique detail in the gas chamber allows the simple snap fitting of bespoke **MEDICLIP** pipe clips, eliminating the need to drill the trunking body. The **MEDICLIPS** are available in two sizes to accommodate medical gas pipes of 15mm and up to 22mm diameter. Once installed the clips can be easily removed and relocated anywhere along the trunking length without the use of a key or tool.

Concealed Lid Fixings

In keeping with the screw free fascia, the **CABLEFLOW RO-H** range uses a bespoke lid retention slug that neatly slides into a channel created by the base-lid assembly and prevents it from being opened inadvertently. A specific lid removal tool accesses the channel and allows the lateral movement of the slug, thus ensuring that no damage is caused to the powder coated finish. The transparent slug has no visual impact on the appearance of the trunking, contributing towards each products superb aesthetics.

The **RO-V** systems similarly have a screw free fascia with retention screws concealed behind a decorative polymer extrusion.

End Caps and Corners

All of our trunking configurations have purpose made end caps. These are manufactured from steel in most cases and powder coated to complement the remainder of the system whilst ensuring that the overall aesthetics of the product are maintained.

The end caps allow each end, top or bottom of each system type to be neatly capped off, and a special entry end cap is available to facilitate the ease of access into the trunking for all services via conduit entry (for cabled services), where required.

By using metal end caps the EMC integrity of the cabled elements of the RO range is maintained which cannot be achieved where plastic or polymer end caps are used.

None of the **CABLEFLOW RO** systems are available with corners. This is a design concept we thought about from the outset and reviewed based upon how dialysis areas are serviced efficiently. Where at all possible, all corners, so as to avoid 'dead-legs' and potential blockages in pipework, should be eliminated at the design stage. Interfaces with adjacent walls can be easily dealt with via builder's work constructions.

Patient Reading luminaires

By using the **CABLEFLOW RO** range we have designed-in the capability to provide bedhead reading/observation or Examination lighting via one or more adjustable arm type luminaires in almost every product. These are attached to the front of the trunking using a bespoke bedlight bracket and we can supply these fittings from a variety of manufacturers ranges. They can easily be site-fitted by the installing contractor.

The luminaire can be controlled via the patient handset with the addition of the respective relays and diodes where necessary which are supplied and installed by the relevant nurse call manufacturer to ensure compatibility with their system, although we can integrate them into our factory build program.

Trunking mounted bedlight controls allow the lighting to be switched locally at the bed position with ease.

All assembly fixings are hidden from view, ensuring an easy to clean and aesthetically pleasing finish.

Bedside Entertainment (PatientPower)

The **CABLEFLOW RO-V** systems can also accommodate the containment and support structures for bedside entertainment systems where provided via an adjustable arm type product such as Patientline™ or HTS.

Further information on this facility is available upon request.

EMC Certification

Protecting electronic components within the patient environment from Electromagnetic Interference and Radio Frequency Interference is of paramount importance, never moreso than within a healthcare environment.

The **CABLEFLOW RO** range has been designed specifically to ensure that each chamber, and in turn each individual compartment, controls both the emission and reception of Electromagnetic and Radio Frequency Interference which has been independently assessed and certified by BSi.

By specifying the **CABLEFLOW RO** range you can be satisfied that the EMC elements of the collateral product standard BS EN 60601-1 have been complied with and consequently Declarations of Conformity meeting the essential requirements of the Medical Devices Directive 93/42/EEC are issued.

All metallic sections have an earthing provision, therefore the system components can be simply earthed in accordance with the latest IEE Wiring Regulations (BS

7671). This has been designed and tested to ensure that all static build up is dissipated away without causing any effect to sensitive nurse call or other ancillary components within the trunking and it's environment. This has specific importance when considering the build-up of static within a patient, clinical or cleaning staff, which could easily be discharged through the trunking when they come into direct contact.

An electrostatic discharge point can be fitted so that items where electrostatic discharge may occur (such as bed frames) can be attached with minimal fuss.

In addition, Group 1 and Group 2 medical locations should be fitted with an equipotential bonding connector which is connected to the main earthing system of the enclosure.

Engraved Text and Legends

Due to the specific nature of individual accessory lids in hospital applications, it is essential that legends and usage instructions are clearly evident to the user. We adopt a policy of engraving all text and legends on our systems thus ensuring a greater life span for the component and making it easy for the user to identify the relevant service.

Module Construction

The **CABLEFLOW RO** range is factory assembled with all outlets pre-configured. The module can then be fitted on site as a second or third fix item and, if required, we can pre-wire and pre-pipe during the manufacturing process, all supported with test certification.

This method of production reduces costs by benefiting from lower labour rates for off-site assembly, and speeds up the general site installation time whilst helping to



eliminate the risk of on-site damage to trunking and abuse by other trades during the construction phases.

Medical Equipment Rail

We manufacture a Medical Equipment Rail-Rail to BS EN ISO 1905 (separate datasheet available) which can be located on or adjacent to the product subject to the actual design solution chosen.

Vertical Risers

We recognise the need to keep the visual effect of the enclosures to a minimum within the environment. The **RO-H** component range has a slim trunking section which tee's into the actual trunking system for the supply of all services, other than for the RO water supply (see below).

Due to the overall size of the RO water supply pipework whether installed in PEX or Stainless Steel, it, along with it's insulation will require a riser of sizeable dimensions, far greater than could be reasonably and aesthetically accommodated within a riser trunking. Consequently, we promote the inclusion of an ancillary builders work duct to house the pipework supply and waste services as applicable.

The overall size of our extruded cable and medical gas pipeline riser is 180 x 45mm but can be doubled up if a larger volume of services are to be accommodated.



Installation Benefits

Each module is secured directly to the wall surface using suitable fixings (refer to installation instructions). The use of proprietary mounting plates is not recommended with such a system thus creating a rigid wall mounted fixture. All wall deviations should be filled using a suitable caulk or mastic.

We have recognised the need of some clients to procure a total package from a specialist manufacturer and our experienced Contracts Department specialises in the installation of our trunking systems, a major factor in satisfying this requirement.

Our in-house installation technicians are trained to the highest standards, to achieve the best possible result when our products and these installation services are co-ordinated. By equipping them with the safest and most up to date machinery and tools, they are able to complete installations quickly and efficiently whilst our expert product knowledge assists in ensuring a successful conclusion to any contract.

Further information about this service can be obtained by contacting our Sales Team who will be pleased to provide you with a costing on your specific application for installation or machine hire.

RO-H combo

The **RO-H combo** system provides a linear solution for one or more dialysis locations where other patient care services are required such as mains power, data, nurse call, patient monitoring and or medical gas. These services are neatly and effectively located with an extruded aluminium trunking section which can be powder coated to the specifiers choice.

The system provides three fully screened cabling compartments within an isolated chamber with a further medical gas chamber if required with the capability to accommodate upto six medical gas pipelines and their associated terminal units. The

bottom 'Media Chamber' houses the RO Media Panel as well as both supply and waste pipework with further capability for various quantities of filtrate solutions where supplied in a pipeline format.

The ability to finish the front facia panel of the **RO-H combo** in a timber veneer finish or a foil laminate and co-ordinate those finishes with either powder coated or anodised top and bottom extrusions ensures that an appealing and functional enclosure can contribute towards the ambience of the healing environment.

RO-H

We have recognised in the development of this product that many dialysis areas are often created in existing healthcare environments where some bedhead services are already installed, save for the RO system.

Taking account of this the **RO-H** system is a bespoke Media Panel enclosure which simply houses the RO system Media Panel, as well as both supply and waste pipework with further capability for various quantities of filtrate solutions where supplied in a pipeline format.

As with the **RO-H combo**, the ability to finish the front facia panel of the **RO-H** in a timber veneer finish or a foil laminate and co-ordinate those finishes with either powder coated or anodised top and bottom extrusions ensures that an appealing and functional enclosure can contribute towards the ambience of the healing environment.

RO-V

Not every location suits a linear system and some architectural requirements will dictate the need for a vertical solution, such as old style Nightingale wards or where a re-configuration of an existing area occurs to become dialysis suite.

The **RO-V** caters for single dialysis station locations and accommodates all other patient care services such as mains power, data, nurse call, patient monitoring

and/or medical gases in a single enclosure. These services are neatly and effectively located with a stylish yet functional vertical trunking assembly which can be powder coated to the specifiers choice.

However, if it's only the media panel that's required then this too is conveniently located in the lower section of the product.

By adopting off-site manufacturing principles, the **MEDICOL RO-V** can be simply and quickly installed once on site. This encapsulates all PEX or stainless steel pipework having previously been positioned internally by us under co-ordination with the RO system specialist during that off-site process.

The pre-fabrication of the internal PEX pipework ensures that the simple yet quick connection to the site-wide pipeline and waste infrastructure aids installation speed.

RO-satellite

Varying RO water system / dialysis providers prefer



specific layout arrangements for their multi-station environments where numerous dialysis stations can be organised in a sensible and ergonomically friendly manner.

This requires the optimum use of floor space with each patient having a dedicated medication and accessories trolley yet where station locations prevents the risk of cross-infection from BBV's. In order to safely store these trolleys in a space efficient manner, low level plinth type workstations are provided. In most cases these are generally constructed off-site using joinery type works and consequently the **RO-satellite** module can be easily installed prior to arrival on site, thus reducing further any site works.

The **RO-Satellite** has been developed for all such applications. Where the off-site manufactured plinths contain patient services they constitute a *medical supply unit* and consequently varying legislation applies. The **RO-Satellite** is also an off-site manufactured component, tested and certified, which simply slots into a performed aperture in the plinth construction. It's flush appearance ensures that the already limited floor space requirements of the area are not compromised further by utilising surface or floor mounted equipment.

An **RO-Satellite** caters for single dialysis station locations and can accommodate all other patient care services such as mains power, data, nurse call, patient monitoring and/or medical gases. These services are neatly and effectively located with a stylish yet functional 'dwarf' height vertical trunking assembly which can be powder coated to the specifiers choice.

The pre-fabrication of the internal PEX pipework ensures that the simple yet quick connection to the site-wide pipeline and waste infrastructure aids installation speed.

RO-EVO

Effectively a flush mounted version of our **RO-V** solution which encapsulates the properties of the **RO-satellite**, it's sister product but where full height capability exists.

This system has been successfully installed in a number of high profile projects.

As with every other system within the RO range it can accommodate all bedhead services and be fully fabricated off-site.

The pre-fabrication of the internal PEX pipework ensures that the simple yet quick connection to the site-wide pipeline and waste infrastructure aids installation speed.

Conformity

All **Cableflow RO** products are supplied with a declaration of conformity, meeting the Essential Requirements of the Medical Devices Directive 93/42/EEZ (as amended).



| Applicable Standards | |
|-----------------------------|--|
| Document Reference | Document Description |
| BS 196 | Non-reversible Plugs and Socket Outlet Up to 250 Volts |
| BS 476 | Fire Tests on Building Materials and Structures |
| BS 1363-2 | 13A Switched and Unswitched Socket Outlets |
| BS 2754 | Construction of Electrical Equipment for Protection against Electric Shock |
| BS 3676-1 & BS EN 60669-1 | Switches for Fixed Electrical Installations |
| BS 4533 | General Requirements for Luminaires |
| BS 4662 | Electrical Accessory Boxes |
| BS 5394 | Radio Interference Characteristics of Fluorescent Lamps |
| BS 5490 | Degrees of Protection Provided by Enclosures (EN 60 529) |
| BS 6496 | Powder Coating to Metal Enclosures |
| BS 6701 | Code of Practice for Installation of Apparatus Intended for Connection to Certain Telecommunication Systems |
| BS 6972 | Specification for General Requirements for Luminaire Supporting Couplers for Domestic, Light Industrial and Commercial use |
| BS 7671 | IEE Wiring Regulations (incorporating EN 60 364-7-710) |
| BS EN 737-1 | Medical Gas Pipeline Systems. Terminal Units for Compressed Medical Gases and Vacuum |
| BS EN 737-4 | Medical Gas Pipeline Systems. Terminal Units for Anaesthetic Gas Scavenging Systems |
| BS EN ISO 11197:2004 | Particular Requirements for Safety of Medical Supply Units |
| BS EN 50081 | EMC Generic Emission Standard |
| BS EN 50082 | EMC Generic Immunity Standard |
| BS EN 50083 | Cabled Distribution Systems for Television and Sound Signals |
| BS EN 50085 | Cable Trunking and Cable Ducting Systems for Electrical Installations |
| BS EN 60439 | Specification for Low-Voltage Switchgear and Controlgear Assemblies |
| BS EN 60601-1 | Medical Electrical Equipment. - General requirements for safety |
| BS EN 60601-1-2 | Collateral standard. Electromagnetic compatibility. Requirements and tests |
| IEC 60364-7-710 | IEC Wiring regulations – Medical Locations |
| CIBSE LG:2 | Lighting Guide – Medical Installations and Hospital Buildings |
| HTM 01 | Anti-static Precautions |
| HTM 17 | Health Building Engineering Installations |
| HTM 2007 | Electrical Services Supply and Distribution |
| HTM 2011 | Emergency Electrical Services |
| HTM 2014 | Abatement of Electrical Interference |
| HTM 2015 | Bedhead Services |
| HTM 2020 | Electrical Safety Code for Low Voltage Systems |
| HTM 02-01 | Piped Medical Gas Installations |
| HBN 53:2004 | Facilities for Renal Services - Satellite Dialysis Unit |
| NHS SPEC C49 | Patient Call Systems |
| 72/23/EEC | Low Voltage Directive |
| 89/336/EEC | EMC Directive |
| 93/42/EEC | Medical Devices Directive |

