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The **AVSE** *medical gas Area Valve Service Unit Enclosure*

THE KING'S AWARDS FOR ENTERPRISE
2023
INNOVATION

CABLEFLOW™
HEALTHCARE

applications

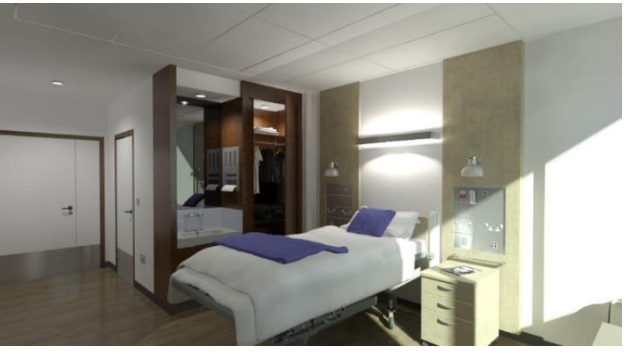
CABLEFLOW

2023











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Innovation is at the heart of an evolutionary healthcare infrastructure. Challenging boundaries whilst being respectful of clinical skills are two valued philosophies which ensure knowledge led developments in bedroom architecture.

At **CABLEFLOW** we recognise the need to be different, to ensure product development offers practical and sustainable progression whilst always ensuring full compliance with Patient Safety Standards and improving the clinical environment for clinicians and patients alike.

We are proud of our British healthcare heritage which offers universal application around the world. Having been conferred both a prestigious **Queens Award for Enterprise: Innovation** and a **Kings Award for Enterprise: Innovation** users of our products and systems take confidence in this unique recognition of Cableflow as a market leader.

Recognised as Britain's foremost medical supply unit manufacturer our range of products whether standard or bespoke offer solutions to satisfy many in-patient design concepts across all clinical environments whether primary or tertiary care areas, and every speciality in-between.

In 2005 our **integra** product became the first and only linear bedhead trunking system to achieve Royal recognition with a **Queens Award for Enterprise: Innovation** from Her Majesty Queen Elizabeth II. This achievement was further endorsed in 2023 with a **Kings Award for Enterprise: Innovation** for our (POAG) equipotential earth bonding socket.

Improving the clinical architecture, patient and clinician experience whilst ensuring flexibility and adaptation in later use are hallmarks of our innovative bedhead solutions. Whether in an acute hospital setting or more domestic environments such as Hospice's and the like our systems can be tailored to your requirements.

The **Cableflow Area Valve Service unit Enclosure (AVSE)** evolves out of a growing market demand for a fully compliant enclosure to neatly and effectively house Area Valve Service Units (AVSU's) as part of the medical gas pipeline system within a healthcare facility.

The AVSE provides an enclosure which is aesthetically pleasing, slim and rounded in profile whilst meeting the performance requirements of components forming part of the medical gas pipeline system - from plant to terminal unit.

These are all hallmarks of this British designed and manufactured product.

BS ISO 11197:2019 is the defining performance and manufacturing standard for enclosures of medical gas pipeline system components, and the **Cableflow AVSE** is designed as being fully compliant with its requirements.

Each AVSU module (valve box) provides an integral safety and maintenance element to the medical gas pipeline system at the point of use. It's installation location is defined in ISO 7396 (cl 8.31), and (S)HTM 02-01.

The **Cableflow AVSE** provides a neat, compact and aesthetically versatile enclosure for AVSU's, pressure switches and alarm panels whilst ensuring ease of system maintenance.

EXPERT KNOWLEDGE

Our expert knowledge of medical gas and electrotechnical standards underpins our position as the UK's premier medical supply unit designers and manufacturers. This knowledge-based experience places us in a unique position to develop this range of system enclosures for the medical gas industry.

As a design led, clinical facing manufacturer our reputation for developing innovative medical supply units is exemplary. Bringing modern design creations to a simple extension of the medical gas pipeline system package reflects a natural progression of our product offering.

IMPROVED AESTHETICS

An ever increasing demand for improved aesthetics within patient, public and clinician facing areas has driven a need for reflection to embrace more creative and flexible design solutions.

A robust, low profile extruded aluminium enclosure, co-ordinated with interior décor schemes for surface colour and laminate finish are key features of the **Cableflow AVSE**.

A design concept which eliminates visible cover fixings, the **AVSE** sits seamlessly into any interior scheme. Specifying the **Cableflow AVSE** could not be simpler and ensures the medical gas installation is a core element of the overall interiors scheme.

VENTING TO ATMOSPHERE

Many commercially available AVSU's do not meet the basic venting to atmosphere safety and performance requirements. The design configuration of each **Cableflow AVSE** addresses this essential technical need by ensuring ventilation in accordance with the flow rate test set out in BS ISO 11197:2019.

AVSE ventilation openings are suitably protected to ensure an ingress protection (IP) rating as defined on BS EN 60598 of IP2X as a minimum. A carefully designed airflow chamber with concealed openings prohibits any direct penetration from outside the enclosure.

ALARM PANELS

Medical gas pipeline system alarms are integral to the function of an AVSU. The Cableflow AVSE can accommodate any manufacturers alarm panel and supplementary connections to local pressure switches or transducers.

CLINICAL APPLICATIONS

The **Cableflow AVSE™** delivers a neat and aesthetically functional enclosure in a broad range of colour options and facia finishes allowing it to blend into almost any clinical environment and co-ordinated with our extensive range of medical supply units used across all clinical spaces.

PRE-PIPED OR SITE PIPED

Designed for speed of installation and supplied as either a factory pre-piped unit or to be piped on site by the installing contractor the AVSE provides cost options for the medical gas pipeline installer. With two versions, one for surface and one for semi-recessed mounting the **Cableflow AVSE** is versatile for all situational requirements.

Where pre-piped then the pipelines shall normally be connected at ceiling level.

TWO PART MDF FACIA

The two part decorative central facia allows the low level AVSU cover panel to be removed independently and without disruption to ceiling grids. This is only required when extensive maintenance may be required.

SIZE VARIANTS

The **Cableflow AVSE** is offered in two standard widths designed to accommodate 1-3, or 4-6 area valve service units. It caters for pipelines of either 22mm, or where high oxygen or vacuum flows are required then with 28mm pipelines. This width concept ensures that the Cableflow AVSE is at home in a general ward environment as much as an ICU or Theatre location, irrespective of volume of pipelines.

Each **AVSE** may also contain an alarm panel, an access cover to a power supply spur and the pressure switches. This requirement simply needs to be stated at the time of order.

IMPROVED AESTHETICS & FLUSH MOUNT

An **AVSE** installed flush within a partition where required by the installation design must ensure that the receiving wall cavity is ventilated. This style of installation means the cavity becomes the enclosure by the definition of the standard and must therefore be ventilated to achieve the requirements of BS ISO 11197:2019.

The design of the **Cableflow F-AVSE** incorporates the necessary ventilation and removes the need for complex and often costly partition construction whilst satisfying compliance issues.

The **Cableflow F-AVSE** sits neatly into the plasterboard aperture and is finished with a push fit polycarbonate decorative frame.

HIGH GRADE MATERIALS

Comprising a first and second fix assembly (Base & Cover) the extruded aluminium base frame and bespoke lower end cap provide a robust soft-lined first-fix enclosure which is easily secured to the wall. This first-fix contains the AVSU's and pipelines.

Using only high grade UK sourced materials in keeping with our Cableflow traditions of promoting engineering excellence, the second-fix high grade laminate covered flame retardant mdf panels are finished in a standard Formica F3091 Crystal White. *Please contact our sales teams for non-standard finishes should the facia cover be required in an alternative finish to match the chosen hospital décor.*

POWDER COAT FINISH

All visible aluminium surfaces, sides and end caps are powder coated RAL9016 matt using a Syntha Pulvin polyester powder coat supported by a 30 year Applicators Guarantee.

Decorative RAL 7040 cover strips are fitted to conceal the securing devices of the mdf facia.

LOCAL ALARM PRESSURE SWITCHES OR TRANSDUCERS

The AVSE will normally accommodate local alarm pressure switches which are easily accessible without the need to fully open up the AVSE. For ease of maintenance these are accessible below ceiling level to permit simple adjustment and are contained behind a lockable access cover.

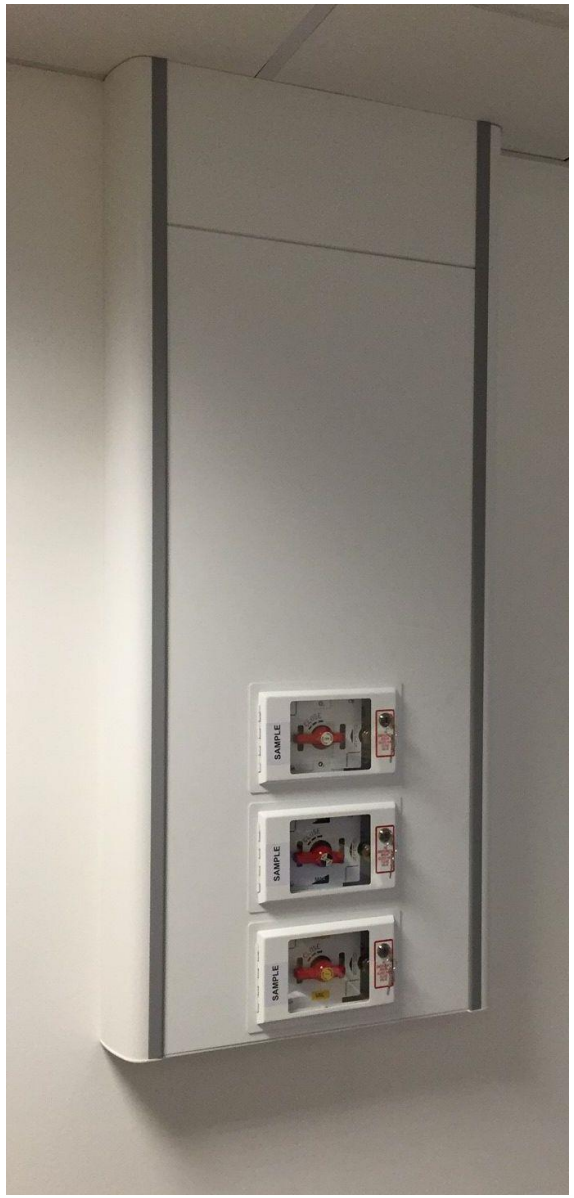
AVSU INCLUSION

The Cableflow AVSE is designed to incorporate all commercially available AVSU boxes/valves by leading industry manufacturers. The AVSU type to be incorporated is specified at the time of order.

STANDARDS COMPLIANCE

An AVSU is a constituent part of a medical gas pipeline system serving a patient area via medical gas terminal units and other peripheral devices. Consequently, the enclosure into which the AVSU's may be located are defined within the scope of BS ISO 11197:2019. No other product performance or manufacturing standard exists.

The Cableflow AVSE is supplied with a Declaration of Conformity as meeting the Essential Requirements of the UK Medical Devices Regulations 2002.



CE MARKING

Where distributed throughout the European Economic Area (EEA) (European Union (EU)) the movement of products is controlled by the CE Marking Directive 93/68/EEC. The CE Marking Directive and use of CE marks outside of the Area is not enforceable but is often incorrectly requested as an indicator of manufacturing standards compliance rather than a movement principle within the EEA .

CEILING INTEGRATION
The **Cableflow AVSE** is designed to suit a variety of ceiling heights within a range of 2200 – 2700mm with an overall enclosure height not exceeding 2100mm. The adoption of this length template ensures the lower positioning of AVSU access hatches are as described within (S)HTM 02-01 when installed.

The **Cableflow AVSE** is primarily designed to protrude through the ceiling line at high level irrespective of the ceiling height, and where the upper laminated front mdf facia is fixed in position once installed.

This principle allows the ease of access after install and eliminates the impact of maintenance activities on fixed ceilings, and further allows ease of adaptation.

OPTIONAL CEILING SHROUD
A ceiling shroud is available as an installation option to interface the contours of the AVSE with the cut ceiling tile or mineral fibre board.

Where required, bespoke ceiling heights can be accommodated – *please consult our sales team for further information.*

POWER SUPPLY FOR ALARM PANEL
Where a medical gas alarm panel is incorporated into the AVSE (*e.g: as Shire Controls or Beacon Medaes MP26*) then internal space is provided for accommodating the power supply spur.

Where the power source is supplied by a third party (e.g: not the medical gas installer) then this may be loose fixed at high level ahead of the AVSE install and then located into position within the AVSE and fixed without a need to unwire. This is specifically helpful when modular wiring installations are used.

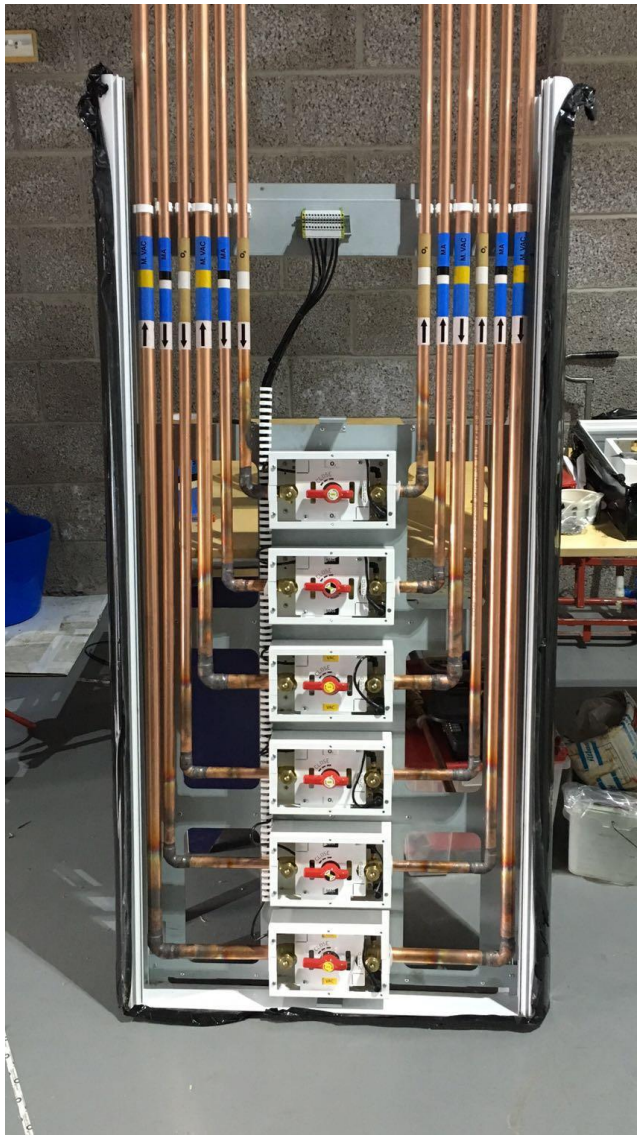
Where the power supply is an integral element of the factory build this is supplied as a double pole switched spur fitted with insulated and compartmentalised power cabling as required by BS ISO 11197:2019. This element is independently EMC tested and certified accordingly. The spur is accessible via a secure and bespoke access cover for isolation and/or maintenance purposes.

PRE-PIPED OR SITE-PIPED
Designed for speed of installation and supplied as either a factory pre-piped unit or to be piped on site by the installing contractor. With two versions, one for surface and one for semi-recessed mounting the **Cableflow AVSE** is versatile for all situational requirements.

Pipelines shall normally be connected at ceiling level.

PRE-GASSED OPTION
Where all piping, wiring and pressure testing is completed during the manufacture stage then installation can be easily effected upon delivery in a simple two stage process.

Lightweight in construction owing to its aluminium exterior framework and laminated mdf facia the **Cableflow AVSE** can be easily handled and hung on the wall using a support bracket for ease of Location, levelling and fixing.

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Medical Supply Units applicable standards compliance declaration

Document Reference	Document Description
BS 476-10: 2009	Fire tests on building materials and structures. Guide to the principles, selection, role and application of fire testing and their outputs
BS 1363-1:2016 + A1:2018	13 A plugs, socket-outlets, adaptors and connection units. Specification for rewireable and non-rewireable 13 A fused plugs
BS 1363-2:2016 + A1: 2018	13 A plugs, socket-outlets, adaptors and connection units. Specification for 13 A switched and unswitched socket-outlets
BS 1363-4:2016 + A1 2018	13 A plugs, socket-outlets, adaptors and connection units. Specification for 13 A fused connection units switched and unswitched
BS 5266-1:2011	Emergency lighting. Code of practice for the emergency escape lighting of premises
BS 5733:2010+A1:2014	General requirements for electrical accessories. Specification
BS 6701: 2016	Telecommunications equipment and telecommunications cabling. Specification for installation, operation and maintenance
BS 6972: 1988	Specification for general requirements for luminaire supporting couplers for domestic, light industrial and commercial use
BS 7671:2018 + A2 2022	Requirements for Electrical Installations 18th Edition IET Wiring Regulations (incorporating Section 710 (Special Locations Medical Locations)
BS 8300-1:2018	Design of buildings and their approaches to meet the needs of disabled people. Code of practice
BS EN 12206-1:2021	Paints and varnishes. Coating of aluminium and aluminium alloys for architectural purposes. Coatings prepared from coating powder
BS EN 12464-1: 2021	Light and lighting. Lighting of work places. Indoor work places
BS EN 13032-2: 2017	Light and lighting. Measurement and presentation of photometric data of lamps and luminaires. Presentation of data for indoor and outdoor work places
BS EN 50083-2:2012	Cable networks for television signals, sound signals and interactive services. Electromagnetic compatibility for equipment
BS EN 50085-1:2005+A1:2013	Cable trunking systems and cable ducting systems for electrical installations. General requirements
BS EN 50085-2-1:2006	Cable trunking systems and cable ducting systems for electrical installations. Cable trunking systems and cable ducting systems intended for mounting on walls and ceilings
BS EN 60439-5: 2006	Low-voltage switchgear and control gear assemblies. Particular requirements for assemblies for power distribution in public networks
BS EN 60529:1992+A2:2013	Degrees of protection provided by enclosures (IP code)
BS EN 60598-1:2021	Luminaires. General requirements and tests
BS EN 60598-2-22:2014 +A1: 2020	Luminaires. Particular requirements. Luminaires for emergency lighting
BS EN 60601-1-6:2010+A1:2013 +A2:2020	Medical electrical equipment. General requirements for basic safety and essential performance. Collateral standard. Usability
BS EN 60601-1-2: 2015 + A1:2021	Medical electrical equipment. General requirements for basic safety and essential performance. Collateral standard. Electromagnetic compatibility. Requirements and tests
BS EN 60669-1:2018	Switches for household and similar fixed-electrical installations. General requirements
BS EN 61000-6-3:2021	Electromagnetic compatibility (EMC). Generic standards. Emission standard for residential, commercial and light-industrial environments (formally BS EN 50081-1)
BS EN 61000-6-4:2019	Electromagnetic compatibility (EMC). Generic standards. Emission standard for industrial environments
BS EN 61000-6-1:2019	Electromagnetic compatibility (EMC). Generic standards. Immunity for residential, commercial and light-industrial environments (formally BS EN 50082-1)
BS EN ISO 7396-1:2016 +A1:2019	Medical gas pipeline systems. Pipeline systems for compressed medical gases and vacuum
BS EN ISO 7396-2: 2007	Medical gas pipeline systems. Anaesthetic gas scavenging disposal systems
BS EN ISO 9170-1:2017	Terminal units for medical gas pipeline systems. Terminal units for use with compressed medical gases and vacuum

Document Reference	Document Description
BS EN ISO 9170-2:2008	Terminal units for medical gas pipeline systems. Terminal units for anaesthetic gas scavenging systems
BS EN ISO 7599:2010	Anodizing of aluminium and its alloys. General specifications for anodic oxidation coatings on aluminium
BS EN ISO 11197:2019	Medical supply units
ISO 19054:2006 + A1:2016	Rail Systems for supporting medical equipment
HBN 00-03	Designing generic clinical and clinical support spaces
HBN 00-04	Circulation and communication Spaces
HBN 00-09	Infection control in the built environment
HBN 04-01	Adult in-patient facilities: planning and design
HBN 04-02	Critical care units
HBN 4, Supplement 1	Isolation facilities for infectious patients in acute settings
HBN 6	Facilities for Diagnostic imaging and interventional radiology:
HBN 07–01	Satellite Dialysis Unit
HBN 07-02	Main Renal Unit
HBN 09-02	Maternity Care Facilities
HBN 09-03	Neonatal Units
HBN 57: 2003	Facilities for critical care
HTM 00	Building Engineering in the Health Sector
HTM 02-01	Medical gas pipeline systems
HTM 06-01	Electrical services: supply and distribution
HTM 06-02	Electrical safety guidance for low voltage systems
HTM 08-03	Management of bedhead services in the health sector
HTM 17	Health Building Engineering Installations
HTM 2014	Abatement of electrical interference
HTM 2020	Electrical safety code for low voltage systems
CIBSE LG 02: 2019	Lighting guide - Hospitals and health care buildings
CIBSE LG 3: 2001	Lighting guide - The visual environment for Display Screen Use
CIE	European Lighting Guide
NHS SPEC C49: 1997	Nurse Call Systems. Revision 3
EU MDR 2107/745	EU Medical Device Regulation
UK MDR 2002	UK Medical Device Regulations (SI 2002 (no. 618, as amended)

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Cableflow International Limited

For full product data sheets go to our website or contact us directly

www.cableflow.com

Cableflow International Limited | Windsor House | Abbey Barn Road | High Wycombe | Buckinghamshire | HP11 1NN | United Kingdom

(tel) 00 44 (0)1494 52 88 11 | (email) sales@cableflow.com

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