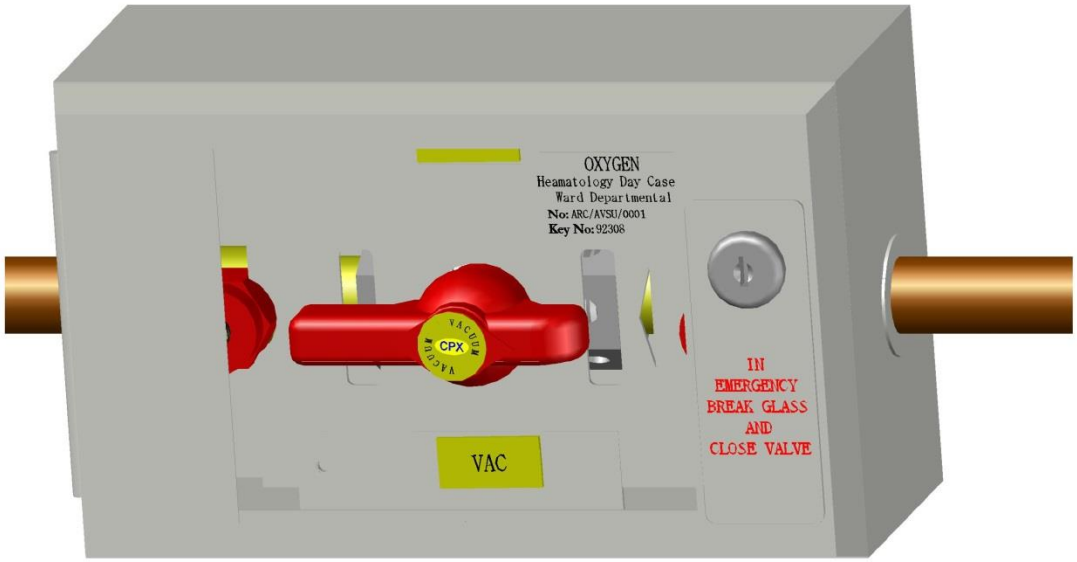
PRECISION UK Ltd

Specialists in HTM02-01 Medical Gas Pipeline Equipment

Technical Specification

Area Valve Service Unit (AVSU)



Product Description

The AVSU can be used in conjunction with a CPX-A local area alarm system to meet the requirements of NHS Technical Memorandum HTM 02-01, HTM 2022 and Model Engineering C11.

Area Valve Service units shall be CE marked to the Medical Device Directive 93/43/EC as a class IIb medical devices. A copy of the certificate authorizing the manufacturer to apply CE marking under the aforementioned directive and a Certificate of Origin must be provided for review. Area Valve Service units shall be manufactured under an ISO 13485:2003 quality management system. A copy of the certificate of registration shall be provided for review.

Definition of Use

The AVSU is used to isolate the medical gas supply in a department/area for maintenance or in an event of emergency.

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In the event of an emergency the glass in the front of the area valve service unit can be broken to allow access to the valve.

The area valve service unit offer leak free connections as soon as they are installed to corresponding medical gas pipelines and are safe and easy to use.
The area valve service unit is designed to be mounted directly into a medical gas pipeline system via copper tail pipes supplied and located within wall or ceiling voids or anywhere that general access is restricted.

The copper pipe stubs are intended to be of sufficient length to enable brazing directly to the medical gas pipeline system utilising flux less brazing to WKO (82) 1.
The area valve service unit shall incorporate a ball valve with NIST connectors either side, mounted in a lockable box with emergency access, blanking facility as a secondary means of isolation with the intention to provide a physical barrier to the gas supply in order to eliminate any risk of contamination during the initial installation or the medical gas pipeline system or any upgrade/maintenance work. Pressure switches can be fitted inside the enclosure to enable local monitoring from a local area alarm or a hospital central alarm system or BMS if required.

The box shall be manufactured from 16 SWG steel, double primer coated and epoxy powder coated for protection. The valve shall be located to the back plate of the box with non-corrosive material preferably brass, steel or plastic clips shall not be used. A color coded service identity label will be fitted behind the valve handle and visible through the window.

The door shall be 16 SWG steel, double primer coated and epoxy powder coated and will be common for all services. The door lock shall be 90degree clockwise turn stainless steel assembly with minimum 20,000 combination lock types. The door should incorporate an emergency access window manufactured from Safe Glass, Float glass windows are not acceptable and include the option to have a clear polymer pull out window.

Each AVSU shall have a label manufactured from a printed vinyl substrate with a 2 piece protective polypropylene laminate. The label will bear the relevant gas name or symbol and be colour coded as a minimum and mounted on the 1st fix section of the AVSU ensuring anti-confusion. The label shall visible through the AVSU window and tamper/damage proof.
An Anti-tamper device with monitoring to a Building Management System (BMS) shall be available on each AVSU.

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NIST connections with integral Non Return Valves will be at either side of the AVSU ball valve. AVSU ball valves shall be manufactured from die-cast nickel plated brass alloy with male threaded 2 piece valve, chrome plated brass ball, ptfe seals and flat face connections to allow removal of the valve without the requirement to distort the pipeline. AVSU ball valves shall be operated by a RED die cast handle quarter turn and benefit from low torque operation and shall be easily replaced if required for maintenance. AVSU ball valves shall incorporate blow out proof stems.

Brass Thru spades shall be provided either side of the valve and each valve shall be provided with a Brass blanking spade for deployment during installation or modification of the system without interruption of the main supply. Plastic Thru plates are not acceptable due to the risk of cracking under pressure causing leaks and incompatibility with oxygen.

The brass NIST connectors shall be located upstream and downstream of the valve and brazed into the brass stub pipe assembly for strength, Nists soldered directly into copper pipe shall not be acceptable as excessive force in an emergency could cause rupture of the pipe and ultimate shutdown of whole departments. These facilitate easy purge for testing and emergency supply form part of each stub pipe shall incorporate a check valve with metal seat thus avoiding the possibility of degradation over time. Each NIST shall include a NON Return valve with a 100% seal.
AVSU stub pipes shall protrude outside of the box by minimum 400mm each side to avoid scorching when brazing to pipeline and allow for 6 gases to be vertical brazed into the pipeline and to reduce soldered joints. Horizontal joints shall not be accepted.

The AVSU can be installed as a surface or flush mounted unit, with a flush plate required for flush mounting. Pressure switches if required can be fitted inside the box to enable local monitoring-see the following picture.

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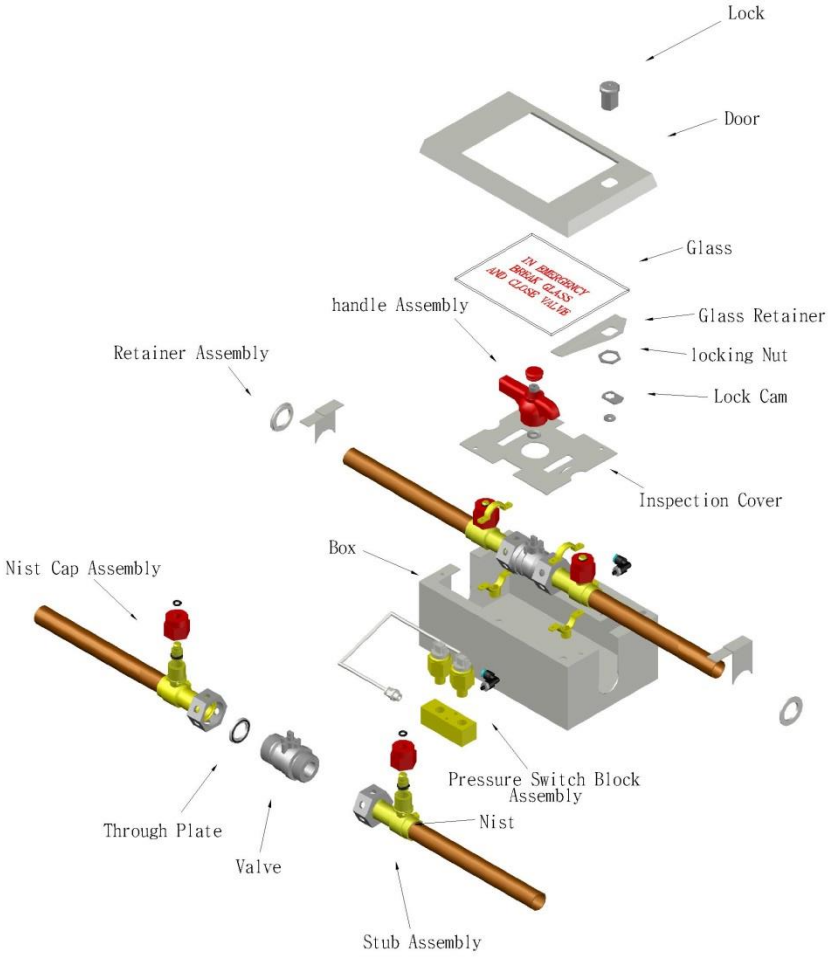

- All Gas ID labelling is fixed internally and viewed through the door window.
- All AVSU assemblies are fully pressure tested for valve tightness and leakage prior to packing and delivery.
- All AVSU assemblies are batch numbered for traceability prior to packing and delivery.
- Each AVSU is individually end capped and sealed in a clear polythene bag to maintain cleanliness.
- Each AVSU is then packaged with logical and concise labelling identification.

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Emergency Access

This valve assembly is housed in a steel white epoxy coated key operated enclosure for security. A breakable glass front to the door provides access to the valve in an emergency. The valve is operated through 90 degrees (quarter turn) and the open or closed position is clearly visible. In the event of an emergency break the glass and turn the valve to the closed position. It is not possible to refit or reset the means of emergency access.

Materials

The area valve service unit comprises of a 2-piece full bore male threaded nickel plated brass ball valve c/w chrome plated brass ball, blow out proof stem, stem o-ring, Teflon ® ball seals and flat face copper stub pipe assemblies.

The valve is designed to have a tight shut off and blow out proof stem for protection against pressure surges.

Brass non interchangeable NIST connectors are fitted upstream and downstream. The NIST connectors provide the facility to purge a system before the working gas is introduced. They also allow the pipeline pressure to be tested and gas samples to be taken.

The copper stub pipe assemblies are manufactured from phosphorous de-oxidised non-arsenical copper to EN 1412:1996 grade CW024A, manufactured to metric outside diameters in accordance with BS EN 13348:2008. The stub pipes are factory soldered to brass flat face seal housings then chemically cleaned and degreased.

The copper pipe stubs are of sufficient length to enable vertical brazing without the need for horizontal joints and direct to the medical gas pipeline system utilising flux less brazing to WKO (82) 1. Flat face housing incorporate Nitrile ® o-ring seals ensuring 100% gas tight connections.

This valve assembly is housed in a steel white epoxy coated key operated enclosure for security.

AVSU22 range:

Product Code	Type (mm)	*Overall Length (mm)
AVSU22-O2	22	1000
AVSU22-N2O	22	1000
AVSU22-O2N2O	22	1000
AVSU22-MA4	22	1000
AVSU22-SA7	22	1000
AVSU22-VAC	22	1000

The CPX AVSU is available in 28, 35 and 42mm sizes.
*Including copper stub pipe each side of the avsu box.

Quality
Area valve service Units are manufactured in the UK under BS EN 13485 Medical Devices: Quality Management Systems. All tube is manufactured under strict quality control procedures to ISO 9001:2008.

CE Marking
Area valve service units are CE marked as a Class IIa Medical Device 93/42/EEC with notified body British Standards Institute and stamped CE 0086.

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

Installation Guidelines
The AVSU may be installed in horizontal or vertical positions. Either way it is advisable to maintain the following sequence from left to right or top to bottom.
02, N2O, 50% O2/50% N2O, Med AIR 4, Surgical AIR, Vacuum
The AVSU should be installed at a height that is easily accessible by hand.
Consideration must be given to furniture or crash rails that may be installed at a later stage of the construction.

Assembly-AVSU

- Open the door, remove valve handle and valve cover plate from the AVSU assembly and store in a safe place.
- Ensure that a cable entry hole is drilled in the box if a pressure sensor is fitted within the box.*Ensure the pressure sensors are on the downstream of the unit.
- Determine the position of the AVSU and secure to the wall utilising the mounting holes on the rear of the box.
- Braze the copper stub to the fixed pipeline system; take care not to burn the enclosure by taking appropriate means.
- Pressure test as per the contract conditions eg.HTM2022 guidelines.
- Install the cover plate and valve handle.

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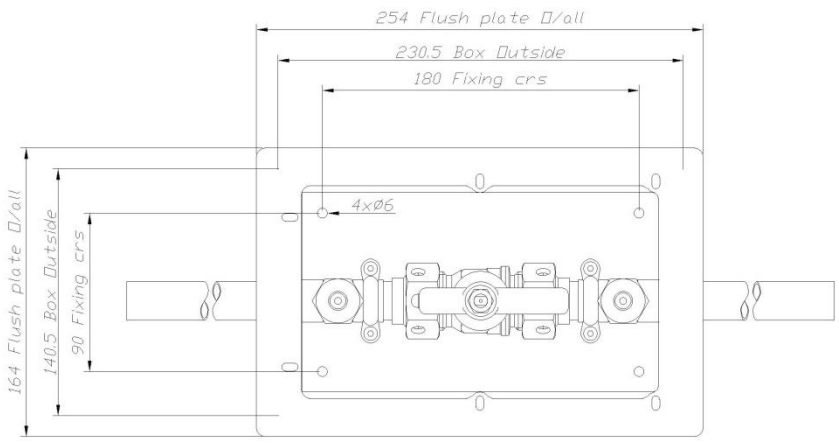
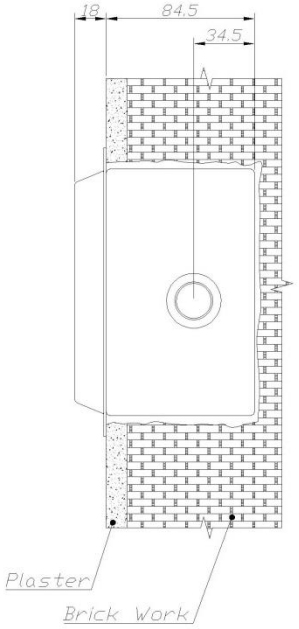
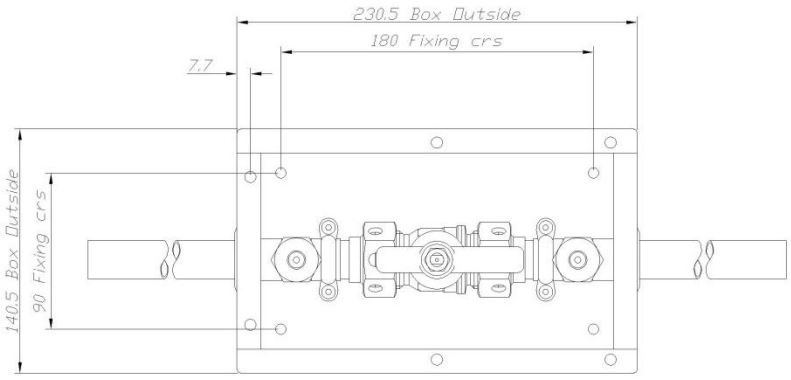
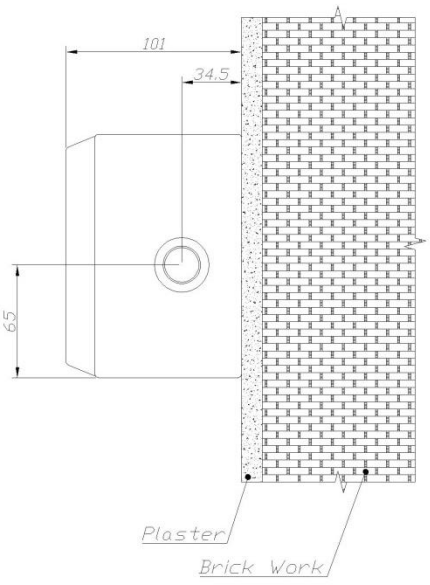
Flush Mounting AVSU





Surface Mounted AVSU





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Pipeline Jointing

The AVSU copper stub pipe is manufactured to BS13348 for connection to the pipeline system and joints shall be made on site using copper, phosphorus and silver brazing alloy CuP282 to BS EN 17672:2010. Brazing should be carried out using oxygen free nitrogen as an inert gas shield to prevent the formation of oxides on the inside of the pipe. Copper pipes shall be cut square with the pipe axis using a sharp wheel cutter wherever possible, and be cleaned to get rid of any cuttings or burrs.

Due to our policy of continual improvement PRECISION UK Ltd reserve the right to alter dimensions and or specification of the items described herein at any time. Although every effort will be made to advise of any such modifications. Please contact us for further information and an up to date specification.

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