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medical gas solutions

Zeus Vertical Headwall

Medical Supply Units

Installation Instructions

Published by Pneumatech Medical Gas Solutions

Important
Personnel must make themselves familiar with the contents of this manual and the function of the unit before installing, operating or maintaining any trunking system.

Information contained in this manual is correct at the date of publication. The policy of Pneumatech Medical Gas Solutions is one of continuous product improvement. Pneumatech Medical Gas Solutions reserves the right to make changes that may affect instructions in this manual without prior notice.

For any enquiry regarding the servicing or repair of this device, contact the nearest accredited Pneumatech Medical Gas Solutions agent, or communicate directly with:

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Any complaints about the products or services provided by Pneumatech Medical Gas Solutions, please give as much of the following information as possible:

Product Part Number
Serial Number
Approximate date of purchase
Apparent fault.

Complaints
complaints@p-mgs.com

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Safety, Storage and Handling Data

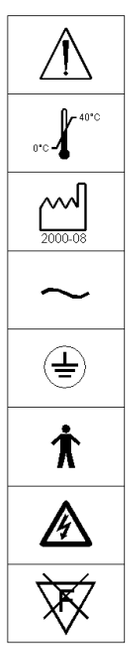
CAUTION!
Do not use oil or grease on any terminal units or pipework, for any reason. This could lead to a FIRE or an EXPLOSION. Only use approved OXYGEN COMPATIBLE lubricants, which can be obtained from Pneumatech MGS.

WARNING!
Before carrying out any maintenance on low voltage electrical services within the Headwall, ensure that the circuits behind all fascias that are to be accessed are de-energised and isolated first.

The Headwall carcass requires no special maintenance procedures, other than if it becomes damaged. Individual fascia plates are removable by first peeling back the wall seal or unscrewing front bezel and removing the fascia fixing screws. Fascia plates are split between extra low voltage, low voltage and gas services. This enables maintenance to be carried out without disturbance to other services.

The Narrow Headwall is structurally the same as the standard Headwall but is 270mm narrower. From here on in, any reference made to the standard Headwall also applies to the Narrow Headwall.

Circuit diagrams, component parts lists and descriptions are all available on request. The following symbols apply to this product and are used in these instructions and on the product in question. The meanings of these symbols are as specified below : -



- Read instructions
- Temperature range
- Date of manufacture (Year/Month)
- Alternating current
- Protected earth connection
- Type B applied part (EN 60601-1:1990)
- Dangerous voltage
- No suitable for mounting on normally flammable surfaces (EN 60589-1)

Environmental Transport and Storage Conditions & Operating Conditions

Min ambient temperature - 0 degrees Celsius
Max ambient temperature - 40 degrees Celsius
Min relative humidity (non-condensing) - 10%
Max relative humidity (non-condensing) - 95%
Atmospheric pressure range - 70-110 kPa

Cleaning

The Headwall and components should be wiped over with a damp cloth frequently to remove any dust or foreign substances.

Environmental Protection

Discard the unit and/or components in any standard refuse facility. The unit does not contain any hazardous substances.

Electromagnetic Interference

Ensure any input and data cables are physically separated from other mains and data cables.

Electrical Details

WARNING...
It is necessary to check the integrity of the power source for safety at regular intervals. These checks should be carried out annually and replacement power supplies used is necessary.

Power source

Mains operated using 110/230V, 50/60Hz, alternating current. Please see labelling inside unit for correct voltage.

Type of protection against electric shock

Class 1 (Mains supplied equipment using a protected earth).

Mode of operation

Continuous (equipment may be left switched on indefinitely).

Degree of protection against ingress of liquids

IPX0 (Not protected).

Degree of mobility

Permanently installed (This unit is electrically connected by permanent means).

Degree of protection

Type B (no Applied Part or with and Applied Part not designed to meet F type (floating) requirements).

Degree of protection against flammable anaesthetic mixtures

Not protected (not suitable for use with flammable gases).

Only IEC approved equipment should be used in conjunction with voice and data sockets, to ensure that the requirements of EN60601-1-1 are met by the medical supply unit.

Description

The Headwall is designed to provide a safe, efficient means of delivering services to patients/staff in general ward areas.

Each Headwall consists of a number of specifically designed extrusions, joined together to form a carcass. A medical rail can be added as an accessory at any time. The dimensions of the medical rail profile (10mm x 30mm) comply with the European standard BS EN ISO 19054 and will accept most clamps currently on the market.

Segregation of services i.e. extra low voltage (<48 volts), low voltage (<600 volts but >48 volts) and medical gases, is maintained throughout. Electromagnetic noise in communication and data systems is minimised with metallic shielding forming the segregation. The Headwall is manufactured in accordance with BS EN ISO 11197 for “Medical Supply Units”, EN 60601-1 for “Medical Electrical Equipment”. All units comply to HTM 2015, HTM02-01 and HTM2022 and with the latest edition of the IEE and IEC regulations.

Electrical sockets from the U.K., Europe and the U.S. and many other types of socket may be fitted. Provision for nurse call’s, data and monitoring sockets can be made at the point of manufacture. The Headwall is usually supplied pre-piped, pre-wired and fully tested but may also be supplied in carcass form.

The Headwall is capable of taking most terminal units currently on the market including East SP or Zeus SP. The Headwall is designed to deliver Oxygen, Nitrous Oxide, O2/N2O 50%/50%, Medical Air, Surgical Air and Vacuum services. Terminal units must only be used with probes complying with BS 5682:1998. Other terminal units should only be used with probes approved for medical applications by the original terminal unit manufacturer. Details of probes which may be used can be obtained by contacting Pneumatech MGS.

The piped distribution system shall use copper pipes manufactured from phosphorous de-oxidised non-arsenical copper to BS EN 1412:1996 grade CW024A and be manufactured to metric outside diameters in accordance with BS EN ISO 13348. Degreasing of pipe shall be such that there is less than 20mg/m2 (0.002mg/cm2) of hydrocarbons on the degreased surface when tested by the method specified in ASTM B280 clause 12. Fittings shall be end feed type, manufactured from the same grade of copper as the pipes and be in accordance with the requirements of BS EN 1254-1:1998 Part 1. The degreasing of fittings shall be such that there is less than 100mg/m2 (0.01mg/cm2) of hydrocarbons on the degreased surface when tested by the aforementioned method. Copper to copper joints shall be made on site using a silver-copper-phosphorous brazing alloy type CP1 or CP4 to BS 1845 using a dry, clean, oil and oxygen free nitrogen inert gas shield with no flux.

Terminal units comply with BS EN ISO 9170-1 for pressure gases and vacuum. These terminal units, and therefore the unit in which they are housed is designed for installation as part of a medical gas pipeline system complying with BS EN ISO 7396-1. The following table lists minimum performance requirements met by terminal units of this type. The performances may well be greatly exceeded in some cases.

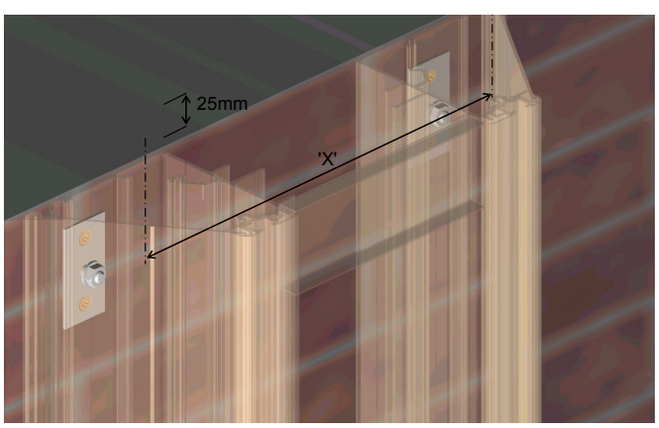
Terminal unit nominal distribution pressure (kPa)	Test pressure (kPa)	Test flow (l/min)	Maximum pressure drop across terminal unit (kPa)
400-500	320	60	15
400-500	320	200	70
800-1000	640	300	70
Vacuum	40*	40	15

* Absolute pressure

Installation

Note. The installation of the mounting plates will form the basis of the Headwall installation. Please see figure 1 for the details of mounting plate positioning.

Figure 1 - Positioning of Wall Mounting Plates



Headwall Wall Mounting Plates. Install

(a) Chalk line the position of the top of the wall mounting plate onto the wall. The mounting height to the top of the plates is 25mm below the finished ceiling level. Check wall for flatness. If the wall is not flat ensure that all mounting plates are packed out to give a straight linear edge on which to mount the Headwall.

(b) The distance between the centres of the wall mounting plates (this is shown as distance 'X' in figure 1, depends on whether the unit is a Headwall or an NHeadwall. For the Headwall, the distance is 574mm, and for the NHeadwall the distance is 304mm.

(c) Fix mounting plates to wall using suitable screws. It is suggested that either UK or DIN M6 countersunk machine screws or No.10 countersunk woodscrews are suitable sizes for fixing the plates.

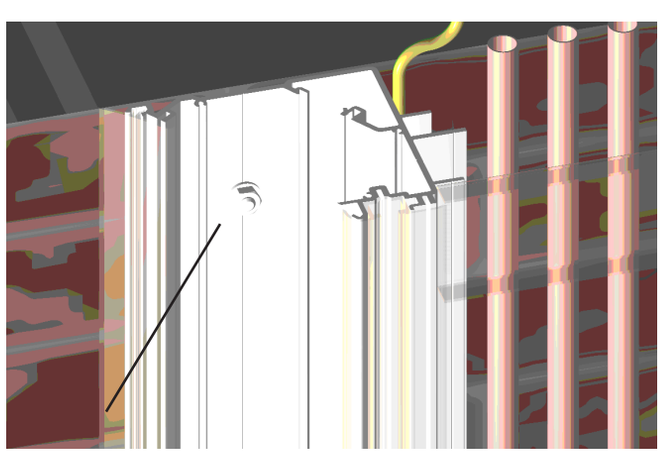
(d) Remove the laminated fascias on both the left and right hand sides by undoing the retaining screws. Position Headwall to wall locating the holes in the back over the studs on the mounting plates. One person should hold the Headwall in position while the M8 washers and nyloc nuts are tightened.

(e) Drill suitable holes through the Headwall backplate and into wall to accept further fixings. Take note of figure 2, which shows correct positions in backplate for fixings to be inserted.

(f) Insert fixings and tighten, ensuring that the Headwall carcass does not bend due to over tightening the backplate to the wall. Packing may be required if the wall is not sufficiently flat.

(g) Check that the Headwall carcass is secure and no movement of the carcass in relation to the wall can be seen by exerting firm hand pressure. When the Headwall has been fixed securely to the wall move to step pipework brazing section.

Figure 2 - Screw Hole Positions



'V' groove
Note....This 'V' groove should be used for further fixings on both sides of the Headwall. The number of fixings will depend on wall type and fixing strength. A minimum of two extra fixings per side must be used. Cadmium or zinc plated screws will reduce the possibility of corrosion.

Pipework. Braze (where applicable).

Note... The gas pipework already installed in the Headwall has been workshop leak tested, only new joints made should normally be tested. Remove any plastic components around area to be brazed.

WARNING!
Cross connection of medical gas pipelines could prove fatal. Only work on one gas service at a time, and ensure that all labelling is correct and maintained throughout the pipeline length. Cross connection tests are detailed in BS EN ISO 7396-1.

(a) All brazed joints made should be made using the approved jointing technique as detailed in the contract specification. HTM02-01 and HTM 2022 installations should use the fluxless brazing technique with Oxygen-free Nitrogen purge.

(b) Make and braze all necessary joints.

Low voltage electrical connections. Connect (where applicable).

The Headwall is usually supplied pre-wired with a customer specified number of low voltage ring/radial mains, which are terminated into the electrical sockets. For a radial main, the electrical contractor should terminate the supplies into the first socket on each circuit, which will be the socket closest to the feed end. Where a ring main is specified, the electrical contractor should terminate the supplies into the first and last sockets on each circuit. These will be the sockets closest to and furthest from the feed end on each circuit. A 20mm hole is provided in the top cover of the unit on both sides. Conduit adaptors must be fitted to these to provide a seal against the ingress of dirt and to remove the possibility of live parts being accessible.

The following table gives the maximum circuit currents allowable for ring and radial mains of 2.5 and 4.0 sq.mm cross-section. Since the Headwall is supplied with wiring between auxiliary sockets completed, they may be installed on a ring or radial main. See the specific wiring diagram inside the Headwall for full details. The table below is a guide only.

Circuit type	Max. load allowable in the circuit (A)	
	2.5 sq.mm cable	4.0 sq.mm cable
Ring	40A	40A
Radial	25A	32A

Overcurrent protection to mains circuits must be made via MCB's that isolate live and neutral conductors simultaneously. Fuses must not be used. Local regulations should be observed for essential circuits. MCB's must be rated at 25A for 2.5sq.mm cables and 40A for 4.0 sq.mm cable.

Extra low voltage electrical connections. Connect (where applicable).

(a) Normally no extra-low voltage cables will be installed; this is the responsibility of the electrical contractor.

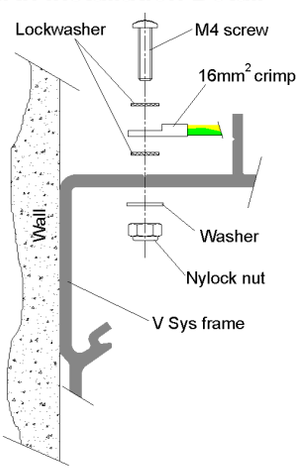
(b) Extra-low voltage cables are to be run through channels or conduits segregated from both pipework and mains voltage cables and equipment.

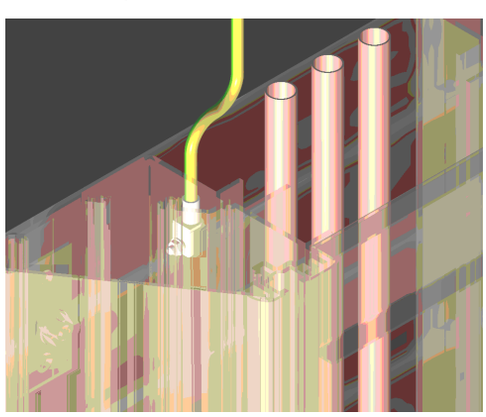
Headwall earth bonding cable. Connect.

(a) At the top of the Headwall, a 16mm2 earth conductor shall be brought in and attached as shown in figure 3. The ring crimp terminal supplied should be fitted as shown using the lockwashers and screw supplied.

(b) Check for protective earthing of all pipelines after brazing is complete. There is no earthing provided as part of the Headwall assembly. Normally all pipelines should be earthed at the entry point of the pipes to the building, zone or ward. If pipes do not have a sound connection to earth, an earth strap must be fitted as part of the electrical connection.

Figure 3 - Earth Installation Detail





Commissioning

Note…This product forms part of the piped medical gas system, designed to comply with EN 737-3. The commissioning procedure within this document must be followed. This unit shall be installed, tested and used in accordance with EN 737-3 and the manufacturers instructions.

Commissioning Procedure for Medical Gas Pipeline System

The following is a list of all tests that need to be carried out for compliance with BS EN ISO 7396-1 clause 12.4. All tests noted in clause 12.4 of BS EN ISO 7396-1 are carried out during manufacture of the Headwall assembly: -

(a) test for leakage;

(b) test for leakage and check shut-off valves for closure, zoning and identification;

(c) test for cross connection;

(d) test for obstruction;

(e) check terminal units and NIST connectors for mechanical function, gas-specificity and identification;

(f) verification of system performance;

(g) test of pressure-relief valves;

(h) functional test of all sources of supply;

(j) tests of control, monitoring and alarm systems;

(k) purging with test gas;

(l) test for particulate contamination of the pipelines;

(m) filling with specific gas;

(n) test of purity of air produced by compressor;

(o) test of gas identity.

Please see BS EN ISO 7396-1 for full details of the requirements of each test listed above.

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