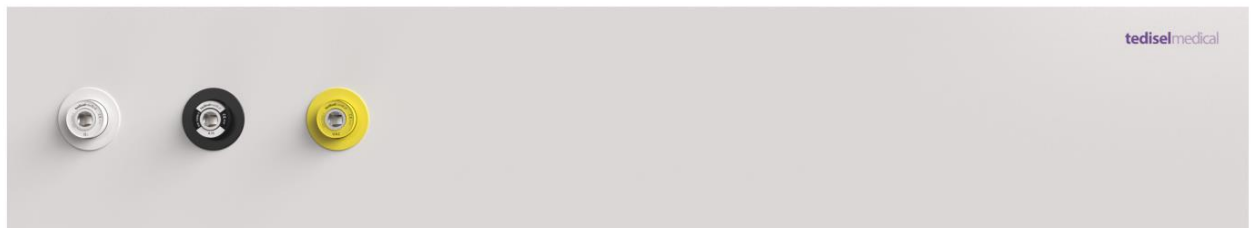


**tedisel**medical

**AIS**

**INSTALLATION MANUAL**



**tediselmedical.com**

**C E** 0197

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## 1. Manufacturer

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## 2. Security information

Important notes in these operating instructions are marked with graphic symbols and signal words.

### 2.1. Injury risk warnings

Signal words such as DANGER, WARNING or CAUTION describe the degree of risk of injury. The different triangular symbols visually emphasise the degree of danger.



WARNING

Refers to a potentially hazardous situation which, if not avoided, could result in death or serious injury.



CAUTION

Refers to a potential hazard which, if not avoided, may result in minor or slight injury.



DANGER

Refers to an immediate danger which, if not avoided, will result in death or serious injury.



Risk of finger entrapment

### 2.2. Warnings of risk of damage

The signal word WARNING describes the degree of risk of material damage. The triangular symbol visually emphasises the degree of danger.



Damage to surfaces: warns of damage to surfaces due to unsuitable cleaning agents and disinfectants.

**NOTICE**

Refers to a potential hazard which, if not avoided, may cause damage to the equipment.

### 2.3. Additional symbols used in the safety instructions



Fire hazard



Explosion hazard: warns of ignition of explosive gas mixtures.



Dangerous voltage: warns about electric shocks that can cause serious injury or death.

### 2.4. Indication of additional information



A NOTE provides additional information and useful tips for safe and efficient use of the device.

### 2.5. Proper use of oxygen.

#### 2.5.1. Oxygen explosion



Oxygen becomes explosive when it comes into contact with oils, greases and lubricants.

Compressed oxygen presents an explosion hazard:

- Make sure that oxygen and gas outlets are free of oil, greasy materials and lubricants!
- Do not use cleaning agents containing oil, grease or lubricants.

#### 2.5.2. Fire hazard



Escaping oxygen is fuel:

- Open fire, red-hot objects and open light are not allowed when working with oxygen!
- Don't smoke!

### 3. Risks

#### 3.1. Gas explosion



Oxygen becomes explosive when it comes into contact with oils, greases and lubricants.

When in contact with oxygen in the air, medical gases may form an explosive or easily flammable gas mixture. The equipment is not suitable for use in environments containing flammable mixtures of anaesthetics with high concentrations of oxygen or nitrous oxide.

If such high concentrations of flammable mixtures of anaesthetics with oxygen or nitrous oxide occur in the environment of the device, there is a risk of ignition under certain conditions.

#### 3.2. Risk of device malfunction



CAUTION: If a device is connected to the equipment and trips the protection mechanism of the corresponding circuit in the health care facility, other devices connected to the equipment will also be de-energised.

#### 3.3. Fire risk



Plug-in connections for the supply of medical gases must not come into contact with oil, grease or flammable liquids.

#### 3.4. Danger of electric shock



Signal cables (network, audio, video, etc.) must be electrically isolated from equipment and the ends of building connections to prevent contact with currents that can cause serious injury or death.

#### 3.5. Risk of equipment falling into the anchorage



WARNING: If during the operation of anchoring the equipment to the mounting surface no element supporting the equipment is provided, the equipment may fall on the person/s performing the installation of the equipment.

#### 3.6. Risk of burns

During the gas connection operation, the operator may suffer burns due to the welding process, as well as damage to the equipment or other surrounding equipment.



WARNING: Personal injury and material damage may occur.

### 3.7. Fire risk

If the working atmosphere is not sufficiently ventilated, volatile substances (e.g. oxygen) may have concentrated in the working atmosphere and could cause a fire when in contact with the heat source used for welding.



**FIRE HAZARD:** Failure to comply with this point can cause serious damage.

### 3.8. Risk of electrical contact

During assembly of the equipment, it may come into contact with any live wiring in the installation, which may cause the metal parts of the equipment to become live and therefore reach the operator.



**DANGEROUS VOLTAGE:** Failure to comply with this point may result in personal injury.

## 4. Symbols used



Applicable part B



Earth (mass)



Equipotentiality



Protective earth (ground)















Connection point for neutral conductor



Nurse call button



Direct lighting

	Indirect lighting
	Operating instructions
	Health Product
	Waste electrical equipment
	CE symbol
	Product code
	Unique identification code
	Serial number
	Manufacturer
	Date of manufacture
	Reference to the instruction manual
	Damage to surfaces





Fire hazard



Danger of explosion



Dangerous tension



NOTICE

Notice



Risk of finger entrapment



WARNING

Warning



CAUTION

Caution



DANGER

Danger

## 5. Installation requirements

### 5.1. Anchoring on the mounting surface. Minimum requirements



DANGER: Failure to comply with this point may result in personal injury.

Hardware for mounting the equipment is not included, the method of anchoring will depend on the surface.

	AIS
Maximum weight [kg]:	11
Maximum torque [Nm]:	-

Maximum weight: Maximum weight per metre of equipment length.

### 5.2. Training

The personnel performing the installation must be properly trained and qualified by the customer. The equipment must only be USED by authorised personnel. Persons who:

1. have received the training and are duly registered (at those levels where legal provisions make such registration necessary).
2. have been instructed in the installation of this device by means of this instruction manual as a basis.
3. are able to assess the tasks they perform on the basis of their own professional experience and training in relevant safety standards and can recognise the potential hazards involved in the work.

## 6. Installation and connection

This section of the manual shows how to install and connect the AIS equipment. It should be noted that these operations will require the removal of parts of the enclosure.

Before proceeding with the installation, the installation plans must be checked in order to locate the inputs arranged in the equipment to supply the different systems of the equipment, both for the distribution of medical gases and for the different electrical circuits, nurse call and voice and data.



See installation drawing of the equipment.

The AIS equipment inlets are located at the rear. The central profile inlet is intended for gases ① and the lower inlet is dedicated to electrical equipment ②. See figure 1.

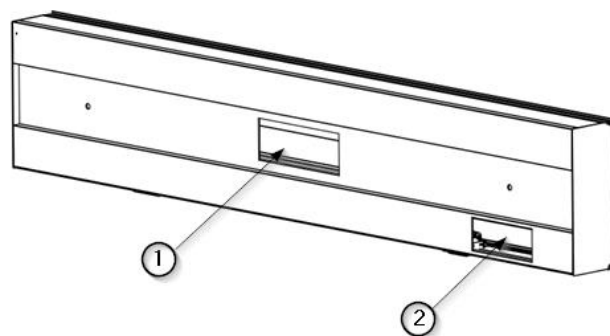


Fig. 1 Supply inputs on AIS equipment

## 6.1. Removal and installation of covers

### 6.1.1. Removing / folding down the hinged front cover

For the installation of the equipment there are rows of anchorage points at the rear of the equipment. The number and distance of these anchor points will vary depending on the length of the equipment and is defined in the corresponding installation plan that accompanies the equipment.



See installation drawing of the equipment.

- Remove the screw ① to be able to remove the hinged front cover ② as shown in Figure 2.

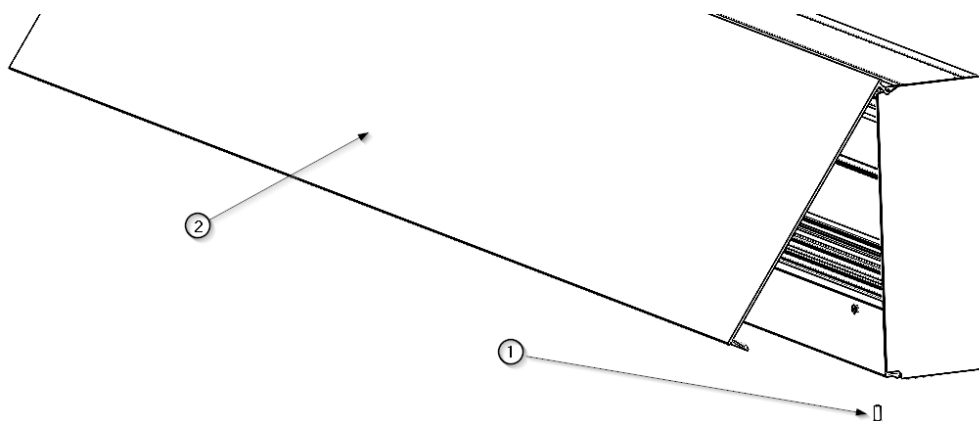


Fig.2 Removing the hinged front cover

- To put it back in place, simply click it into position, leave it in its resting position (resting on the central gas cap) and retighten the screw ①.

### 6.1.2. Removing the central cover of the gas rail

- Remove the hinged front cover as described in point 6.1.1.
- Use the suction cup ① to remove the cover of the central profile ②. This will give access to the wall mounting points ③ and the gas ducts of the unit.

- To replace the central gas cap, place it in position and press until you hear the clipping sound.

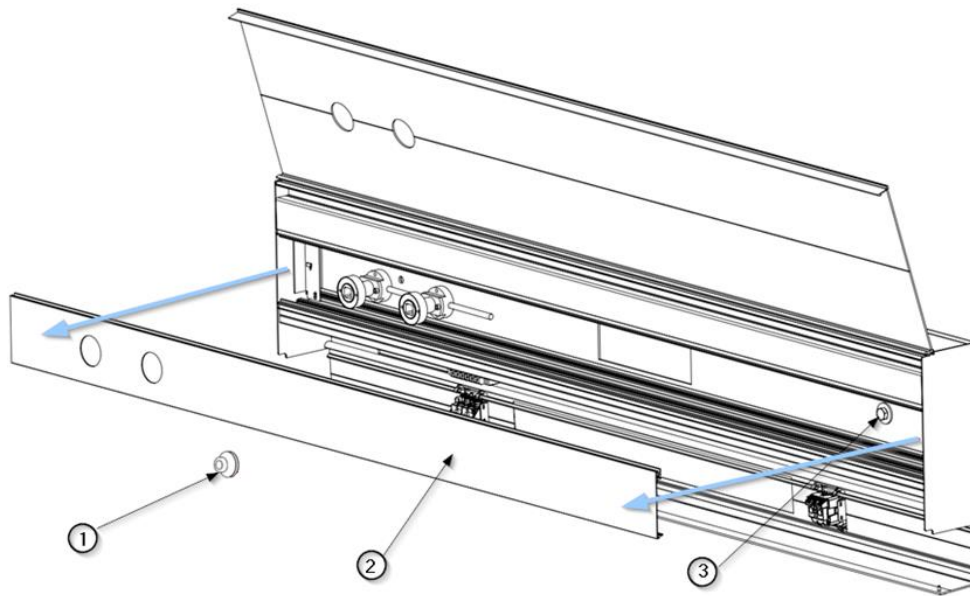


Fig.3 Removing the inner centre cover

#### 6.1.3. Removal / folding down of the power rail cover.

- Remove the M4 countersunk screws DIN 965 (3) and fold down the power rail cover (4) as shown in the illustration. The cover is suspended by its pivot axis.

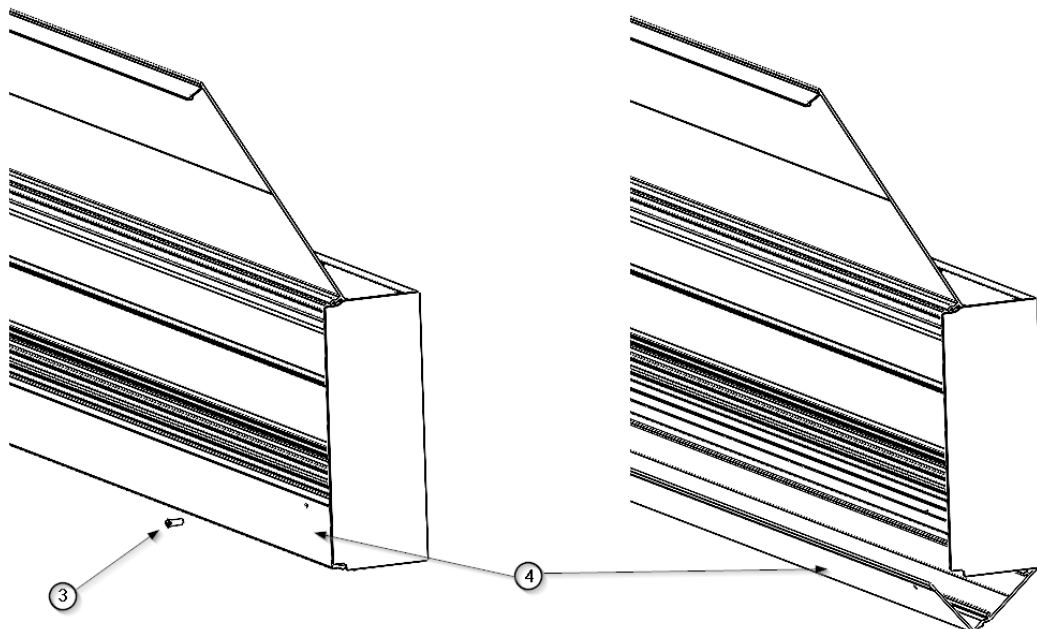


Fig.4 Opening the electrical profile cover

- To replace the cover, close it manually until it makes contact with the chassis of the device and refit the M4 DIN 965 countersunk screws (3).

- Check that the cover is securely in place.

## 6.2. Installation on a masonry wall

- Position the spacers to prevent the centre profile from flexing as shown in figure 5.

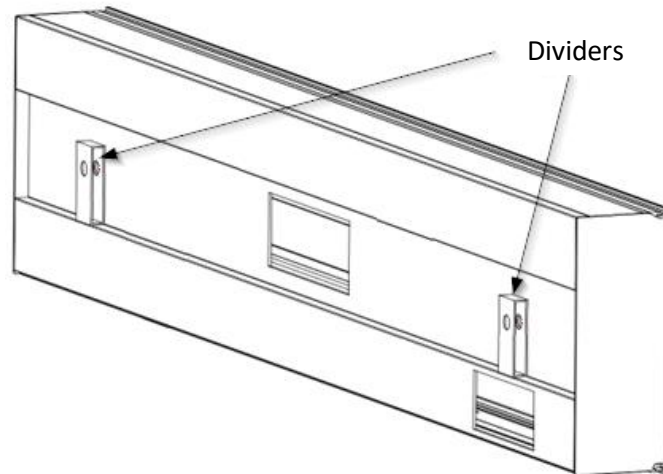


Fig.5 Rear spacers to prevent bending of the centre profile.

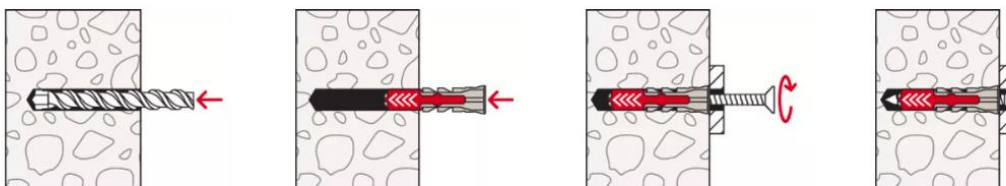
- Put the equipment in position and fit the screws without tightening them definitively, only for the purpose of securing the equipment.
- Check that the equipment is level and correctly positioned and make the final tightening of the screws.



See point 6.1.1 and 6.1.2 for the screws to be used.

The connecting elements to be used when installing AIS on a conventional masonry surface are as follows (see Fig. 6).

Position	Description
1	Screw DIN 571 for 8 mm socket, hexagon head, zinc plated
2	Wide washer DIN 9021 M6 zinc plated
3	Fischer DuoPower Bicomponent Cue



Loads											
DuoPower											
Highest recommended loads <sup>1)</sup> for a single anchor.											
The given loads are valid for wood screws with the specified diameter.											
Type		5 x 25	6 x 30	6 x 50	8 x 40	8 x 65	10 x 50	10 x 80	12 x 60	14 x 70	
Wood screw diameter	[mm]	4	5	5	6	6	8	8	10	12	
Min. edge distance concrete <sup>c<sub>min</sub></sup>	[mm]	30	35	35	50	50	65	65	80	100	
Recommended loads in the respective base material F... <sup>2)</sup>											
Concrete	≥ C20/25	[kN]	0,40	0,95	1,65	1,10	2,30	2,15	4,20	3,30	5,30
Solid brick	≥ Mz 12	[kN]	0,30	0,50	0,55	0,62	0,69	1,20	1,45	1,30	1,35
Solid sand-lime brick	≥ KS 12	[kN]	0,50	1,00	1,60	1,25	2,25	2,20	3,85	2,80	4,50
Aerated concrete	≥ AAC 2 (G2)	[kN]	0,05	0,10	0,15	0,10	0,16	0,20	0,30	0,24	0,35
Aerated concrete	≥ AAC 4 (G4)	[kN]	0,25	0,38	0,55	0,42	0,60	0,60	1,10	1,00	1,45
Vertically perforated brick	≥ Hlz 12 (ρ ≥ 0.9 kg/dm <sup>3</sup> )	[kN]	0,13	0,15	0,17	0,25	0,40	0,25	0,40	0,35	0,40
Perforated sand-lime brick	≥ KSL 12 (ρ ≥ 1.6 kg/dm <sup>3</sup> )	[kN]	0,40	0,60	0,60	0,70	1,00	0,70	2,00	0,75	1,50
Gypsum block	(ρ ≥ 0.9 kg/dm <sup>3</sup> )	[kN]	0,10	0,18	0,37	0,25	0,50	0,35	0,65	0,50	0,50
Gypsum fibreboard	12.5 mm	[kN]	0,24	0,33	0,35	0,35	-	0,50	-	-	-
Gypsum plasterboard	12.5 mm	[kN]	0,12	0,15	0,15	0,15	-	0,15	-	-	-
Gypsum plasterboard	2 x 12.5 mm	[kN]	0,13	0,15	0,24	0,20	0,32	0,30	-	-	-
Mattoni Forato Typ F8		[kN]	0,30	0,30	-	0,25	-	0,25	-	-	-
Tramezza Doppio UNI 19		[kN]	0,15	0,15	0,23	0,15	0,30	0,20	0,52	0,35	0,35
Sepa Parpaing		[kN]	0,30	0,45	0,25 <sup>3)</sup>	0,45	0,45 <sup>3)</sup>	0,45	0,45 <sup>3)</sup>	0,60 <sup>3)</sup>	0,60 <sup>3)</sup>
<sup>1)</sup> Required safety factors are considered.											
<sup>2)</sup> Valid for tensile load, shear load and oblique load under any angle.											
<sup>3)</sup> Load determination on plastered wall.											

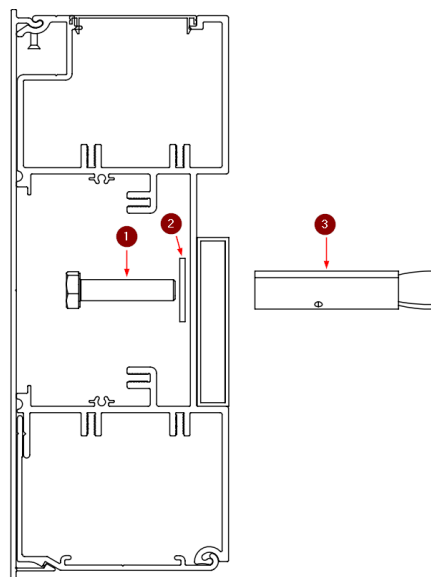


Fig.6 Fixing on a masonry wall

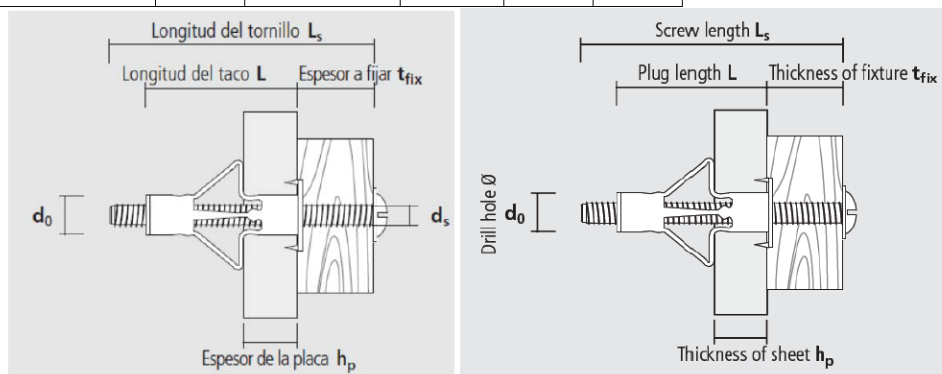
### 6.3. Mounting on plasterboard panels.

- Position the spacers to prevent the centre profile from flexing as shown in figure 5.
- Put the equipment in position and fit the screws provided without tightening them definitively, only for the purpose of securing the equipment.
- Check that the equipment is level and correctly positioned and make the final tightening of the screws.

The recommended connecting elements when installing AIS on a plasterboard surface are as follows (see Fig. 7).

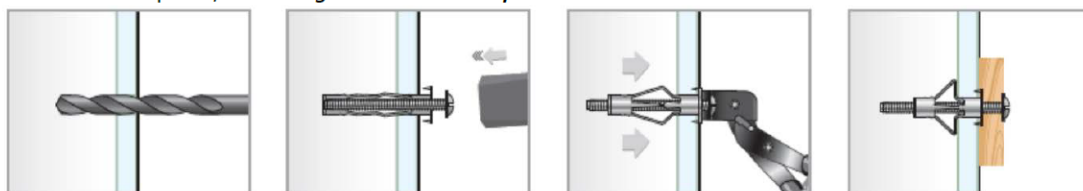
Position	Description
1	Metal expansion plug for plasterboard (incl. screw)
2	Wide washer M6 zinc plated

REF	do [mm]	h <sub>p</sub> min-max [mm]	Rosca-thread	Ls [mm]	L [mm]
HRM 4-20	8	3-18	M4	52	46
HRM 4-24	8	18-24	M4	58	52
HRM 4-38	8	32-38	M4	72	66
HRM 5-16	11	3-16	M5	58	52
HRM 5-32	11	14-32	M5	71	65
HRM 5-45	11	32-45	M5	88	80
HRM 6-16	13	3-16	M6	58	52
HRM 6-32	13	14-32	M6	71	65
HRM 6-45	13	32-45	M6	88	80
HRM 8-16	13	3-16	M8	61	53
HRM 8-32	13	16-32	M8	73	66



**PROCEDIMIENTO DE INSTALACIÓN / INSTALLATION PROCEDURE**

Instalación con pinza / *Mounting with installation pliers*



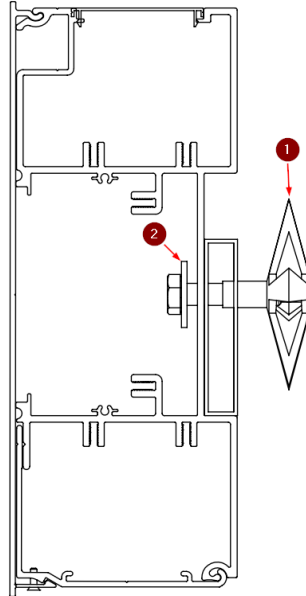


Fig.7 Fixing on plasterboard surface.

## 6.4. Assembly of the HPL plate in AIS

In case the AIS unit consists of several sections and has an HPL front, the front panels shall be joined together using plates to even out the surface and achieve a uniform finish.

### 6.4.1. Installation of the upper and lower plates

To place the plate, we will have the screws previously screwed in to hold it in place.

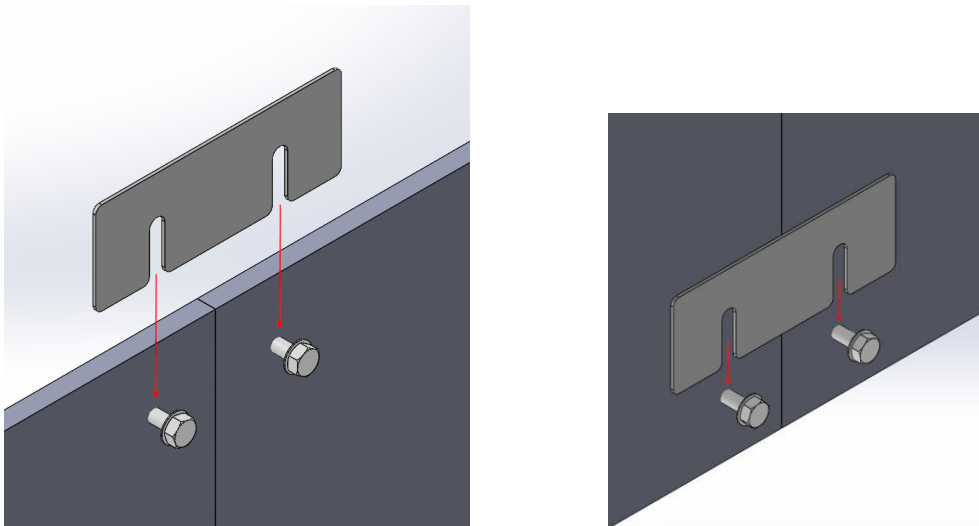


Fig.8 Placement of the plate



Once the plate is fastened with the screws, the screws will be screwed to fix the plate to the HPL and the surface will be the same.

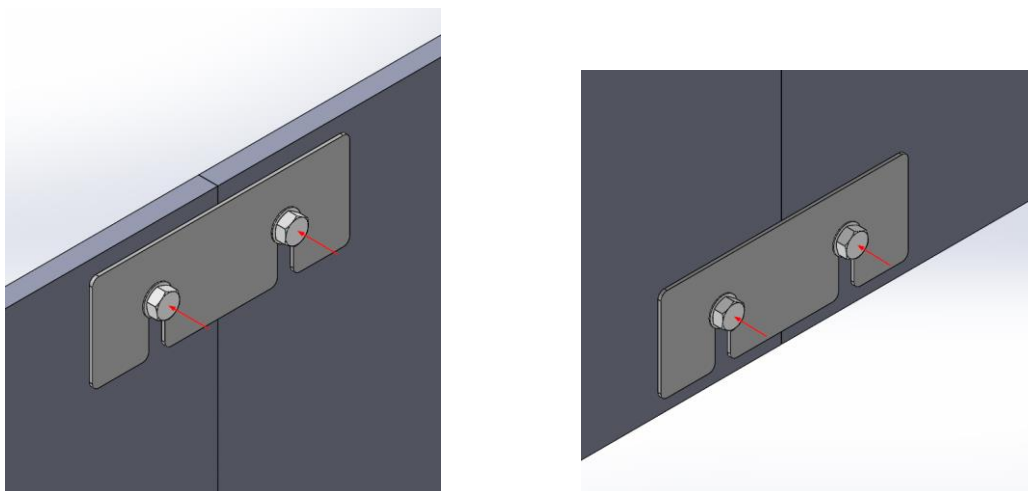


Fig.9 Fixing the plate and levelling of HPL

#### 6.5. Electrical and voice/data connection:

The electrical, voice and data circuits enter the equipment through a window ① whose dimension and location are detailed in the installation plan of the equipment. The electrical circuits terminate in a common terminal block ②, except for voice, data, whose connection is direct to the corresponding mechanism ③. See figure 10.

The equipment must be installed by qualified personnel taking into account national regulations.



To avoid the risk of electric shock, the equipment must be connected to a protective earth. Failure to do so may result in personal injury.

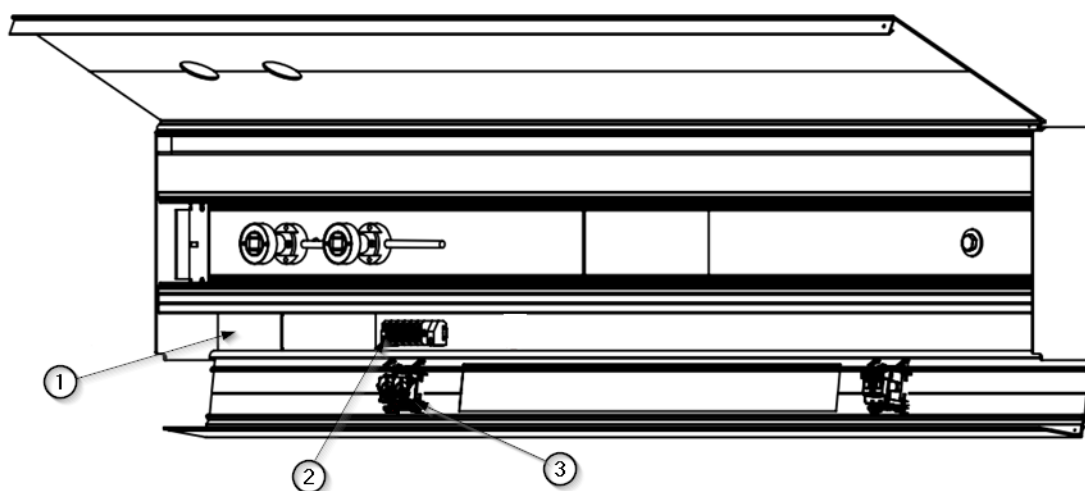


Fig.10 Detail of the electrical connection points on AIS

- Open the hinged front cover, the cover of the power rail will be visible.
- Fold down the cover of the electrical rail, the electrical terminal block will be visible.



See point 6.1 of this manual

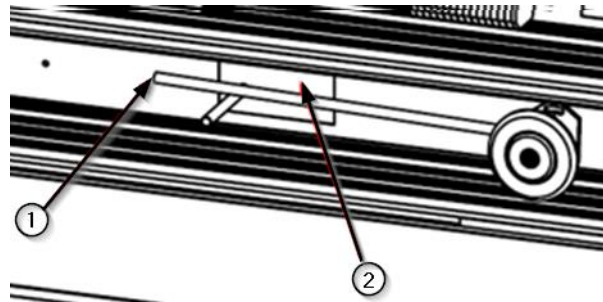
- Make the electrical connections following the installation drawing that comes with the equipment, which indicates the connections to be made on the terminal block.



See point 6.1 of this manual

## 6.6. Gas connection:

The medical gas circuits enter the equipment through a window whose dimensions and location are detailed in the installation plan of the equipment. The connection of the medical gas circuits shall be carried out in accordance with the applicable standards, UNE EN ISO 7396-1\_2016 and UNE EN ISO 7396-2\_2007 by qualified personnel.



*Fig.11 Medical gas and vacuum supply inlet*

- Remove the hinged front cover and the central flue gas cover.



See point 6.1 of this manual

- Identify each of the gas circuits ① before welding and the corresponding one coming into the equipment through the intended inlet ②.



See equipment installation drawing

The gas circuits shall be connected in the inlet area of the installation pipes ② and the installation plan shall be checked before starting the operation.

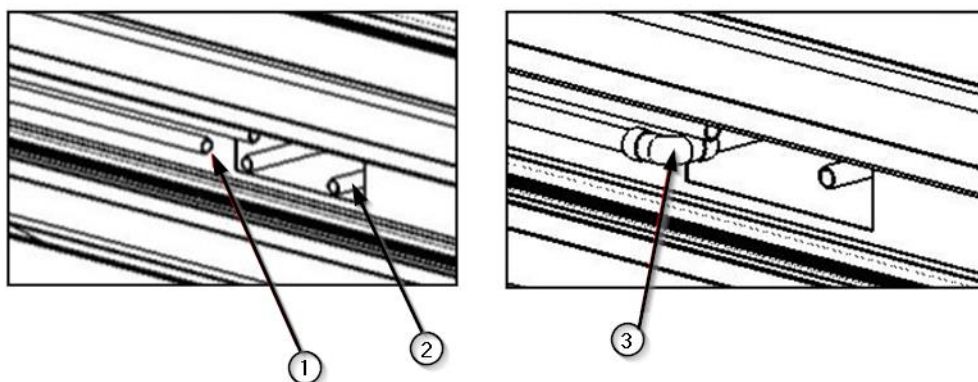


Fig.12 Cutting of pipes and fitting of copper fittings

- Cut off the pipe ① from the equipment piping and the pipe ② corresponding to the gas circuit in question coming from the installation.
- Place the copper fitting (elbow) ③ in position joining the two pipes.
- Solder the 3 components as shown in the picture on the right in figure 12.
- Replace the central protective cap for the medical gas line rail as described in chapter 6.1 of this manual.

## 7. Installation checks

When making adjustments to the equipment, it is necessary:

- verify that the relevant medical gas shut-off valves are properly closed and ensure that the system cannot be reopened.
- verify that the system is electrically disconnected, and measures must be taken to ensure that the system cannot be reconnected.



**CAUTION:** Failure to comply with this point will result in serious damage.

### 7.1. Mechanical test

It must be checked that each of the anchorage points is properly fixed to the mounting surface and that there is no displacement of the equipment.



**WARNING:** Personal injury may result from dropping the equipment.

### 7.2. Electrical circuit tests.

Power must be supplied to each of the circuits provided and a test must be carried out to check that all the mechanisms provided in the circuit in question, and only these, are supplied with voltage.

- Check continuity of protective earth wiring.



**DANGEROUS VOLTAGE:** To avoid the risk of electric shock, equipment must be connected to a protective earth. Failure to do so may result in personal injury.

### 7.3. Gas circuit test.

The equipment must be tested according to the current standards, EN ISO 7396-1\_2016 and EN ISO 7396-2\_2007 by qualified personnel.

The medical gas piping system shall be checked:

- Watertightness
- Integrity
- No crossovers between circuits.
- Good functioning of the gas intakes

These tests shall be carried out at operating pressure.



**CAUTION:** Danger of impact of a metallic element due to faulty disconnection, can cause serious personal injury.

### 7.4. Check envelope.

Check that each of the enclosure elements that have been removed to carry out the installation operations described in this manual are properly fixed and secured in their intended position.

- Checking of openings, closings, foldings, displacements.



**WARNING:** The use of gloves is recommended as minor personal injury may occur.

## 8. Regulations

### 8.1. Team ranking

According to the new **MDD** regulation **93/42/EEC** concerning medical devices, this product family is classified as:

- Class IIb, by Annex II, excluding section 4, regulation 11.
- Protection level IP20 according to IEC 60529.

Equipment intended for continuous operation.

## 8.2. Reference standards

The device complies with the safety requirements of the following standards and directives:

ISO11197: Medical supply units

IEC 60601-1: Medical electrical equipment. General requirements for basic safety and essential performance.

IEC 60601-1-2: Medical electrical equipment. Part 1-2. General requirements for basic safety and essential performance. Collateral standard. Electromagnetic disturbances.