Beaconmedaes

Anaesthetic gas scavenging system unit

AGSS 260~ AGSS 2860

Instructions Book

BeaconMedæs®

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Anaesthetic gas scavenging system unit

AGSS 260~ AGSS 2860

Instructions Book

Original instructions

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This instruction book is valid for CE as well as non-CE labelled machines. It meets the requirements for instructions specified by the applicable European directives as identified in the Declaration of Conformity.

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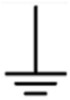
CONTENTS

1. Safety precautions

1.1 Safety symbols

Table 1-1 Explanation of symbols

	Danger to life
	Caution
	Important note
	Bacteria warning
	Direct current
	Alternating current
	Both direct and alternating current
	Three-phase alternating current
	Earth (ground) Terminal
	Protective conductor terminal
	Frame or chassis terminal
	On (Power)
	Off (Power)
	Equipment protected throughout by DOUBILE INSULATION or REINFORORCED INSULATION
	Caution, possibility of electric shock
	Caution, hot surface

	Caution [a]
	In position of a bi-stable push control
	Out position of a bi-stable push control
	Lonizing radiation

1.2 Safety precautions during installation

	All responsibility for any damage or injury resulting from neglecting these precautions, or non- observance of the normal caution and care required for installation, operation, maintenance and repair, even if not expressly stated, will be disclaimed by the manufacturer.

General precautions

1. The operator must employ safe working practices and observe all related local work safety requirements and regulations.
2. If any of the following statements does not comply with local legislation, the stricter of the two shall apply.
3. Installation, operation, maintenance and repair work must only be performed by authorized, trained, specialized personnel.
4. Before carrying out any maintenance, repair work, adjustment or any other non-routine checks, stop the device. In addition, the power isolating switch must be opened and locked.
5. Guidance provided to check correct function of the equipment, if incorrect reading may cause a hazard from harmful or corrosive substances of hazardous live parts.

Precautions during installation

1. Place the device where the ambient air is as cool and clean as possible, within the limitations for operation (see section Reference conditions and Limitations).
2. During installation or any other intervention on one of the connected machines, the machine must be stopped, de-energized and the isolating switch opened and locked before any maintenance or repair. As a further safeguard, persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the start equipment.
3. The electrical connections must correspond to the local codes. The device must be earthed and protected against short circuits by fuses in all phases. A lockable power isolating switch must be installed near the device.
4. For machines controlled by a central control system, a sign stating "This machine may start without warning" must be affixed near the instrument panel.
5. In installations with more than one vacuum pump connected to a common net, manual valves must be installed to isolate each pump. Non-return valves (check valves) must not be relied upon for isolating the pumps.
6. Never remove or tamper with the safety devices.
7. Warning: yellow gas position needle should set right position in vacuum pressure gauge for only used and not in use (see label in vacuum pressure gauge)

	Also consult following safety precautions: Safety precautions during operation and Safety precautions during maintenance or repair. These precautions apply to vacuum pumps. For precautions applying to the connected equipment consult the relevant instruction book. Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your device.

1.3 Safety precautions during operation

	All responsibility for any damage or injury resulting from neglecting these precautions, or non- observance of the normal caution and care required for installation, operation, maintenance and repair, even if not expressly stated, will be disclaimed by the manufacturer.

General precautions

1. The operator must employ safe working practices and observe all related local work safety requirements and regulations.
2. If any of the following statements does not comply with local legislation, the stricter of the two shall apply.
3. Installation, operation, maintenance and repair work must only be performed by authorized, trained, specialized personnel.
4. Before carrying out any maintenance, repair work, adjustment or any other non-routine checks, stop the device. In addition, the power isolating switch must be opened and locked.

Precautions during operation

1. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.
2. Never operate the device in the presence of flammable or toxic fumes, vapours or particles.
3. Never operate the machine below or in excess of its limit ratings.
4. Wear ear protectors if applicable. People staying in environments or rooms where the sound pressure level reaches or exceeds 90 dB(A) shall wear ear protectors.
5. Periodically check that:
   - All guards and fasteners are in place and tight
   - All hoses and/or pipes are in good condition, secure and not rubbing
   - There are no leaks
   - All electrical leads are secure and in good order
6. Never remove or tamper with the safety devices.

	Also consult following safety precautions: Safety precautions during installation and Safety precautions during maintenance or repair. These precautions apply to vacuum pumps. For precautions applying to the connected equipment consult the relevant instruction book. Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your device.

1.4 Safety precautions during maintenance or repair

	All responsibility for any damage or injury resulting from neglecting these precautions, or non- observance of the normal caution and care required for installation, operation, maintenance and repair, even if not expressly stated, will be disclaimed by the manufacturer.

General precautions

1. The operator must employ safe working practices and observe all related local work safety requirements and regulations.
2. If any of the following statements does not comply with local legislation, the stricter of the two shall apply.
3. Installation, operation, maintenance and repair work must only be performed by authorized, trained, specialized personnel.
4. Before carrying out any maintenance, repair work, adjustment or any other non-routine checks, stop the device. In addition, the power isolating switch must be opened and locked.

Precautions during maintenance or repair

1. Use only the correct tools for maintenance and repair work.
2. Use only genuine spare parts.
3. A warning sign bearing a legend such as "Work in progress - do not start" shall be attached to the starting equipment, including all remote start equipment.
4. Persons switching on remotely controlled machines shall take adequate precautions to ensure that there is no one checking or working on the machine. To this end, a suitable notice shall be affixed to the remote start equipment.
5. Never use flammable solvents or carbon tetrachloride for cleaning parts. Take safety precautions against toxic vapors of cleaning liquids.
6. Scrupulously observe cleanliness during maintenance and repair. Keep dirt away by covering the parts and exposed openings with a clean cloth, paper or tape.
7. Never use a light source with open flame for inspecting the interior of the device.
8. All regulating and safety devices shall be maintained with due care to ensure that they function properly. They may not be put out of action.
9. Before clearing the device for use after maintenance or repair, check that operating pressures, temperatures and time settings are correct. Check that all control and shut-down devices are fitted and that they function correctly.

	Also consult following Safety precautions during installation and Safety precautions during operation. These precautions apply to vacuum pumps. For precautions applying to the connected equipment consult the relevant instruction book. Some precautions are general and cover several machine types and equipment; hence some statements may not apply to your device.

	Units and/or used parts should be disposed of in an environmentally friendly and safe manner and in line with the local recommendations and legislation.

2. General instructions

2.1 Introduction

AGSS 260 up to AGSS 2860 are blower units, used to create vacuum for the removal of waste anaesthetic gases in theatres.

The Anaesthetic Gas Scavenging (AGS) disposal system connects to the patients breathing circuit via a transfer and receiving system and removes expired anaesthetic gas from its source. The anaesthetic gas scavenging disposal system is designed to comply with HTM2022 + HTM02-01+MDR, BS 6834:1987 and BS EN ISO 7396-2. In order to achieve the correct performance specified, it should be used with a transfer and receiving system manufactured to the same standard as the system is intended for, in order to ensure the gas probe is compatible.

	All flow and pressure drop values in this Instruction Book are in accordance with standard HTM02-01 - BS6834:1987. For HTM02-01 - EN ISO 7396-2 use 80 l/min with a 1 kPa pressure drop (max.) and 50 l/min with a 2 kPa pressure drop (min) for high flow systems and 50 l/min with a 1 kPa pressure drop (max.) and 25 l/min with a 2 kPa pressure drop (min) for low flow systems.

Waste anaesthetic gas, diluted by room air within the attached receiving system, is transmitted by vacuum, which is generated by an exhauster unit. Vacuum levels within the pipeline installation and flow rates at the terminal units are controlled by flow regulating valves (also called pressure relief valves). Waste gas is safely discharged to atmosphere via a fixed medical gas pipeline installation.

An **AGSS Simplex** consists of a single exhauster unit, operated by remote start switches and an individual flow regulating valve.

An **AGSS Duplex** consists of a double exhauster unit, controlled by an automatic changeover electrical control circuit, which selects the “Standby” exhauster unit when the system conditions require. This arrangement will operate to select “Standby” in the event of a defect, which fails the “Duty” exhauster unit, and will operate to select “Standby” when vacuum levels fall below a predetermined figure. This type of installation may enable the use of the selected “Duty” exhauster unit during normal usage and selects the “Standby” exhaust unit, in addition to the “Duty” exhauster unit, to provide for maximum system demands.

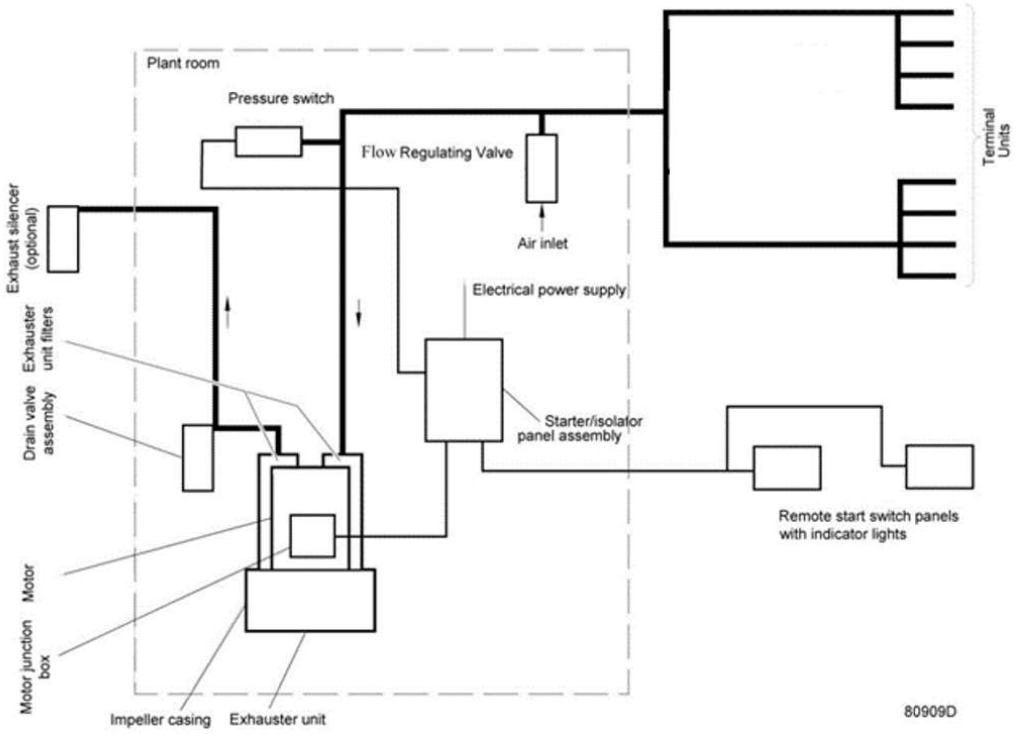


Figure 2-1 Simplified schematic of a AGSS Simplex installation

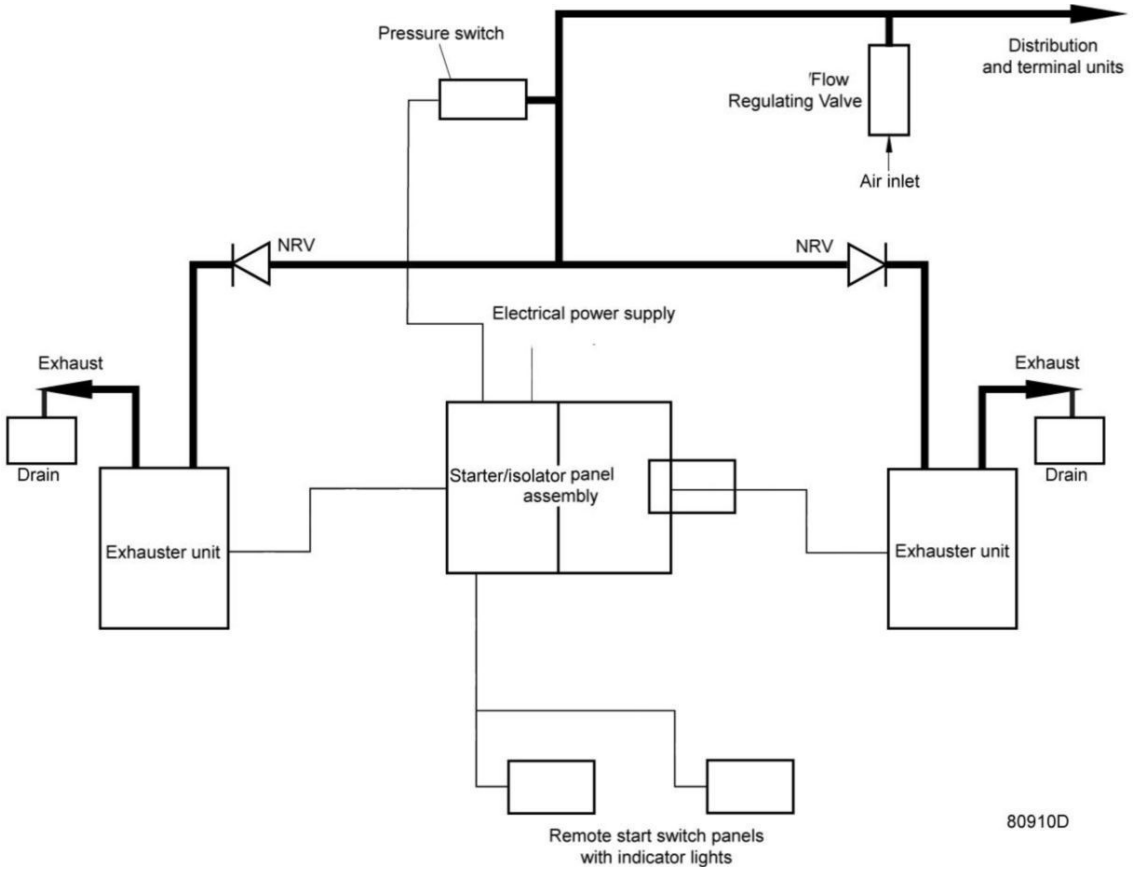


Figure 2-2 Simplified schematic of an AGSS Duplex/Cubicle Duplex installation

2.2 Exhauster units

The exhauster unit is basically an air compressor and consists of an electric motor, directly coupled to an impeller fan. The motor drives the impeller assembly and the airflow is routed to provide a compression cycle. The inlet is connected to the pipeline distribution installation and provides the vacuum and design flow rate at the terminal units. The exhauster unit outlet is connected to the exhaust and waste anaesthetic gas is discharged safely to atmosphere. The electric motor and impeller assemblies are directly coupled and the motor bearings are mounted within the motor casing. A shaft seal is fitted between the motor bearings and the impeller assembly, preventing waste anaesthetic gas from contacting the electric motor. The impeller assembly bearings are clamped and fixed into position with individually ground distance pieces to provide the necessary clearances for the impeller assembly. The exhauster unit bearings do not require lubrication and the exhauster units are designed for continuous operation.

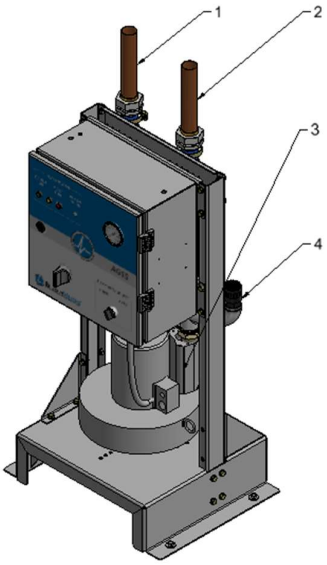


Figure 2-3 AGSS Simplex

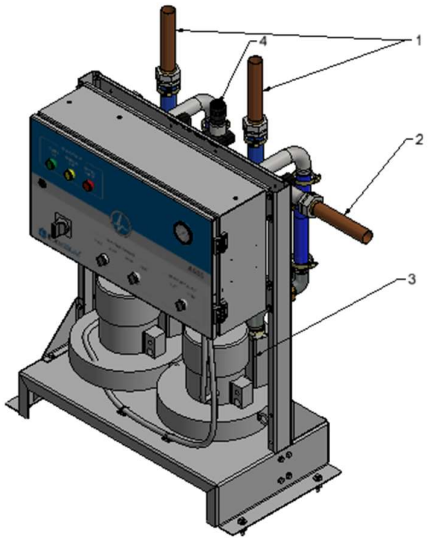


Figure 2-4 AGSS Duplex

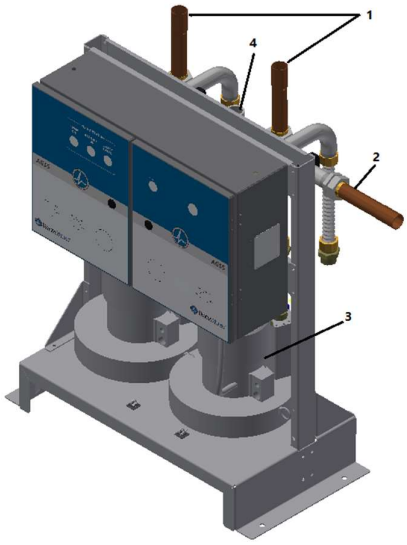


Figure 2-5 AGSS Cubicle Duplex

No.	DESCRIPTION
1	Exhaust pipe
2	Inlet pipe
3	Blower
4	Pressure relief valve

2.3 Electric motors

The type of electric motor fitted depends upon the exhauster unit model and may require either a single phase or three-phase electrical power supply. In addition to driving the impeller assembly, the electric motor also drives its own cooling air flow over the cooling fins. The cooling air is ambient, drawn by the exhauster from the plant room.

2.4 Control panel

	• The service diagrams shown in this section are given as example. Please use the Service diagram delivered with the unit for up-to-date information. • For general information on the vacuum switch delivered with the AGSS unit, and the factory settings, see section Pressure switch settings.

Simplex installation

The starter/isolator panel controls the operation of the exhauster unit and is mounted on a frame above the exhauster unit. The panel is wired to both the electrical power supply and to the exhauster unit electric motor, and provides facilities for the use of remote start switch panels.

The panel isolation switch provides an emergency isolation facility, which controls all electrical power to the exhauster unit, remote start switch panels and system indication lights.

A transformer is incorporated to provide 24V AC for control circuit.

A green *POWER ON* indicator is fitted to the starter/isolator panel and is illuminated whenever power is available to the 24V control and indication circuit.

The *HAND/AUTO* switch controls operation of the exhauster unit and provides continuous operation when selected to *HAND*. When selected to *AUTO*, control of the exhauster unit is passed to the remote start switch panels. Operation of any of the remote start switches activates the exhauster unit, which will continue to run until all remote switches are selected *OFF*.

A green *MOTOR RUNNING* indicator is fitted to the starter/isolator panel and is illuminated whenever the electrical power supply is available at the exhauster unit.

The starter/isolator panel incorporates a thermal protection overload device , which is selected to the exhauster unit full load current rating. The thermal protection overload device also monitors the electrical power supply and phase input. In the event of a fault, the overload device breaks the circuit to the exhauster unit, which will not operate until the system is manually reset. Operation of the overload device also breaks the circuit to the remote start switch panels. Once the fault has been diagnosed and rectified, the overload can be reset within the panel.

Simplex and Duplex/Cubicle Duplex units incorporate a line pressure switch. This line pressure switch monitors the vacuum level and provides an additional control of the remote start switch.

Duplex/Cubicle Duplex installation

The starter/isolator panel used in a Duplex/Cubicle Duplex installation has similar facilities/controls as the Simplex system panel previously described, but incorporates additional features. An additional switch enables selection of a “Duty” pump and sets a particular exhauster unit to operate the system whilst the second exhauster unit remains as “Stand-by”. An automatic changeover circuit is fitted to select the “Stand-by” exhauster unit when system conditions require.

2.5 Remote start switch panels

Remote start switch panels are installed at convenient locations. A maximum of 8 panels (which depends on the wiring and working conditions) may be installed according to a normal working condition, and the wiring should refer to service diagrams. All panels are connected in parallel and wired to the starter/isolator panel. The remote start switch panels consist of either:

- A simplex switch, a green NORMAL indicator and a red PLANT EMERGENCY indicator.
- A duplex switch, a green NORMAL indicator, a yellow PLANT FAULT indicator and a red PLANT EMERGENCY indicator.

The Button Start (see section 4.3) always illuminate when remote start switches are installed and the motor control unit is ‘ON’ and no matter selected to ‘AUTO’ or ‘Hand’.

With the starter/isolator panel selected to AUTO, selection of any remote switch to ON activates the exhauster unit and generates the vacuum within the disposal system. The green indicator light will only illuminate when its respective start switch is selected ON and electrical power is available at the exhauster unit motor and the vacuum level is higher than 65mbar. With Duplex installations and Simplex systems with pressure switch, the indicator light is also extinguished if the vacuum levels fall below a pre-determined value. All remote switches must be selected OFF before the exhauster unit will shut down. The system is designed such that the first switch selected ON operates the exhauster unit all other remote start switch panels indicators remain extinguished until the respective switch is selected ON.

On Simplex installations with alarm and pressure switch, the red PLANT EMERGENCY indicator will illuminate on all remote start switch panels if the vacuum level falls below a pre-set level when the exhauster unit has been called, or if the overload trips.

On Duplex installations, the yellow PLANT FAULT indicator will illuminate, if standby pump start, or one of the overloads trip. The red PLANT EMERGENCY indicator will illuminate after 10 seconds if the vacuum level falls below the pre-set level when the exhauster unit has been called.

2.6 Drain and valve assembly

The drain and valve assembly is fitted to the lowest point of the exhauster unit outlet pipeline. The drain removes any moisture formed by condensation. The valve arrangement enables the drain to be removed for servicing without disrupting operation of the disposal system.

2.7 Relief valve silencer

The relief silencer is optional and may be fitted to the inlet of the relief if the noise of gas flow proves inconvenient.

2.8 Flow regulating valve

	• The system integrity and performance will be impaired if the air inlet to the vacuum/flow regulating valve silencer is obstructed. • Once the regulating valve has been set to produce the system performance, the adjuster must not be moved without carrying out a full system performance check.

Figure 2-6 Flow regulating valve

The flow regulating valve is a spring loaded plate valve which senses the vacuum in the disposal system. The plate valve opens to allow air ingress into the disposal system thereby controlling the vacuum level. The regulating valves fitted to a system is a function of system design to achieve the required performance. By controlling the vacuum level, the flow rate at the terminal unit is maintained within the design limits, regardless of how many terminal units are in use. The flow regulating valve also ensures that the maximum vacuum of 150 to 200 mbar below atmospheric pressure is not exceeded. The flow regulating valve spring force is manually adjusted and set during commissioning and further adjustment should not be necessary.

The flow regulating valve also ensures that the exhauster unit does not run on a totally closed system, thereby reducing the possibility of exhauster unit overheating.

2.9 Terminal units

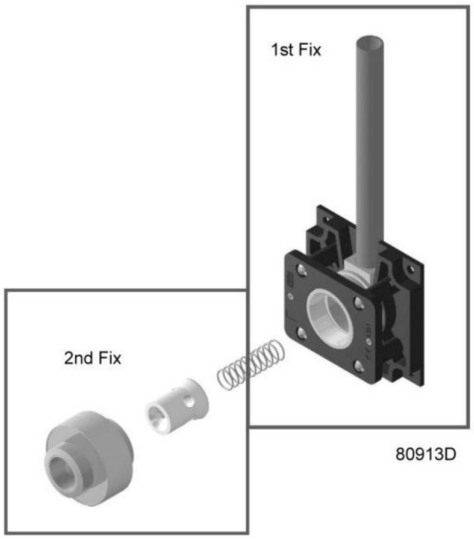


Figure 2-7 Adjustable AGSS terminal unit

AGSS terminal units incorporate a minimum of moving parts and are gas specific. Terminal units of similar design are used in wall, pendant, trunking and hose boom installations and the principle of operation is the same for all installations.

When a terminal unit is not in use, a spring loaded brass valve plug seats against the front body forming an effective seal. Inserting the receiver unit probe and fully engaging the retaining screw thread unseats the brass valve plug compressing the spring. Gas flow is through the central adjustable orifice and radial flutes within the brass valve plug. Normally the flow rate through a terminal unit is controlled by the flow regulating valve setting, however, the orifice provides a “choke” on reaching sonic flow conditions. In this situation the orifice prevents any further increase in flow rates and limits the maximum flow rate to approximately 150 litres/min. This provides an ultimate safety device to protect the patient and downstream equipment.

2.10 Duplex installation

Duplex installations consist of twin exhauster units, rated at 100 % of the maximum system demand, supplying a common distribution system via non-return valves. Logic circuits within the control panel operate the “Standby” exhauster unit in the event of the “Duty” exhauster unit failing. An adjustable system failure pressure switch senses the vacuum level in the distribution system. This pressure switch is adjusted to - 70 mbar to operate when flow at the furthest terminal unit falls to 80 litres/min with a 4 kPa resistance to flow (HTM02-01 - BS 6834). During periods of very high demand, this pressure switch operates logic circuits within the control panel to activate the “Standby” exhauster unit in addition to the “Duty” exhauster unit, restoring the vacuum and flow levels. A timer circuit ensures that the “Standby” exhauster unit operates for 30 minutes after the system pressure switch no longer senses peak demand.

3. Installation instruction

3.1 Introduction

Install the exhauster unit in an area where the noise levels do not cause an inconvenience and adequate ventilation is available for cooling purposes. The Anaesthetic Gas Scavenging disposal system should be floor mounted. Bolts used for mounting should be M8 or similar size.

⚠	Before commencing installation, check if the electrical data on the pump specification plate/s (positioned under the electrical connection box) are compatible with the local power supply. Before electrically connecting the AGSS unit, ensure that the power supply is off and correctly isolated. The electrical power supplies to the AGSS unit must be connected by a qualified electrician in accordance with the wiring diagram supplied with the plant. All wiring must be in accordance with IEE regulations. Cable sizes given in section Electrical data are recommendations only. The (electric components of the) device should be installed outside the patient environment. This environment is defined as a hemisphere with a radius of 2 meter around the patient.

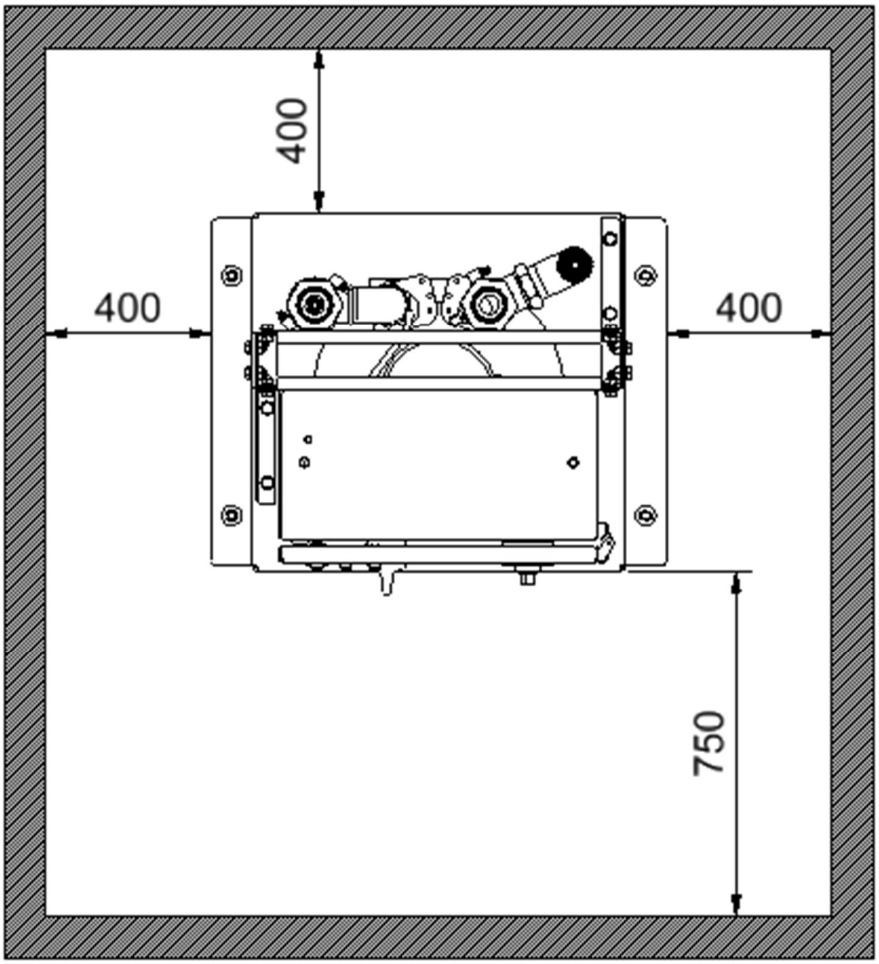


Figure 3-1 Recommended area around installation for operating and maintenance

	The recommended distance between the back of the unit and the wall is 400 mm for easy access. 200 mm is an absolute minimum. Biological warning label to be glued on each drain flask (4, see section Dimension) at installation. Use Loctite 577 on conical threads prior to assembly. Cleaning of the piping network required prior to installation of the AGS. AGS has to be disconnected prior to leak test piping network. If the device must be installed with or connected to other medical devices or equipment in order to operate as required for its intended purpose, sufficient details of its characteristics to identify the correct devices or equipment to use in order to obtain a safe combination.

3.2 Dimension

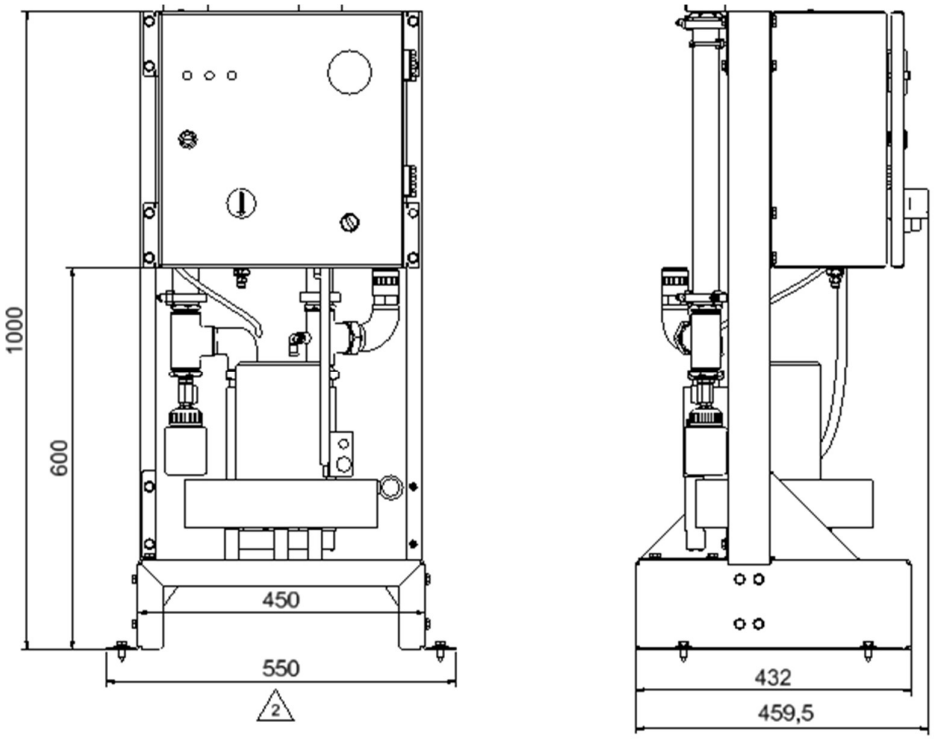


Figure 3-2 AGSS Simplex

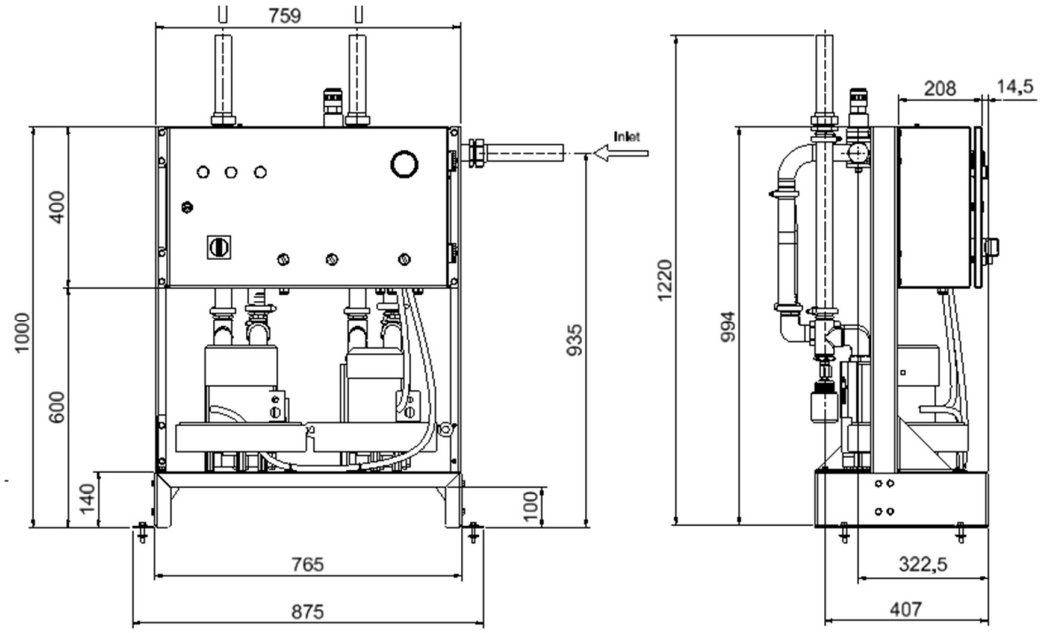


Figure 3-3 AGSS Duplex (For AGSS 260/520)

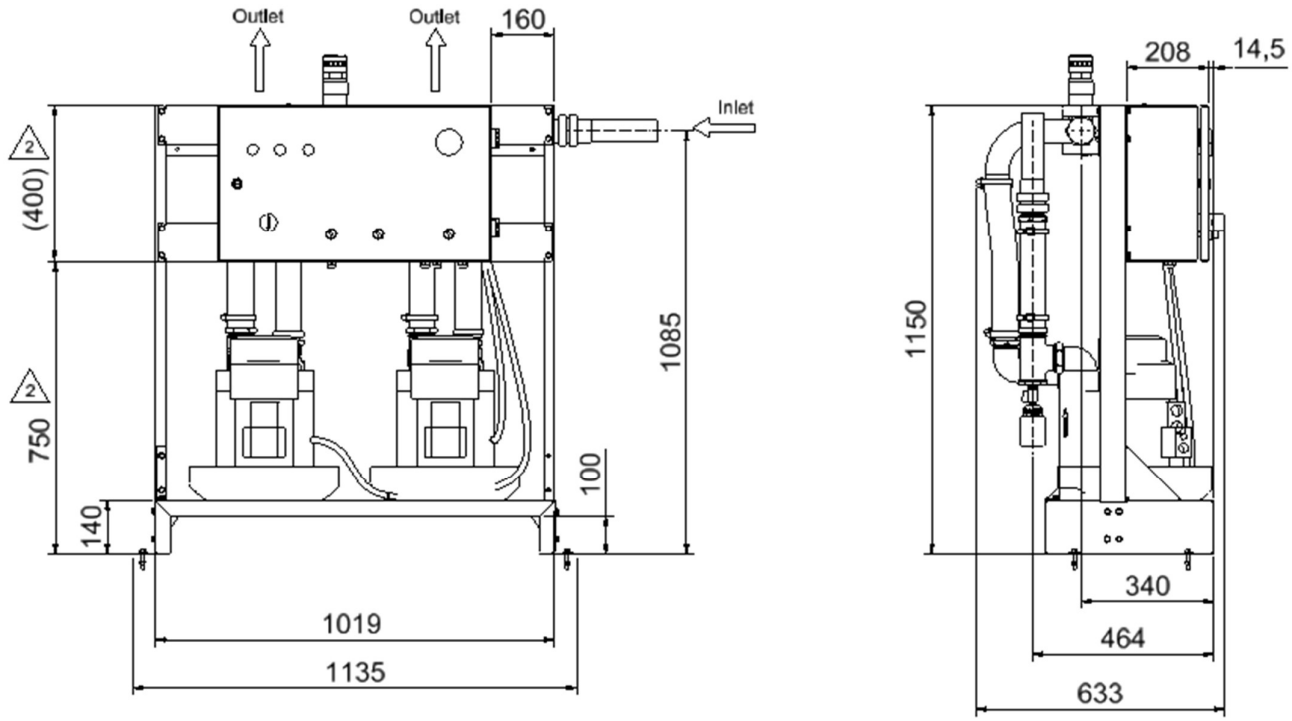


Figure 3-4 AGSS Duplex (Except AGSS 260/520)

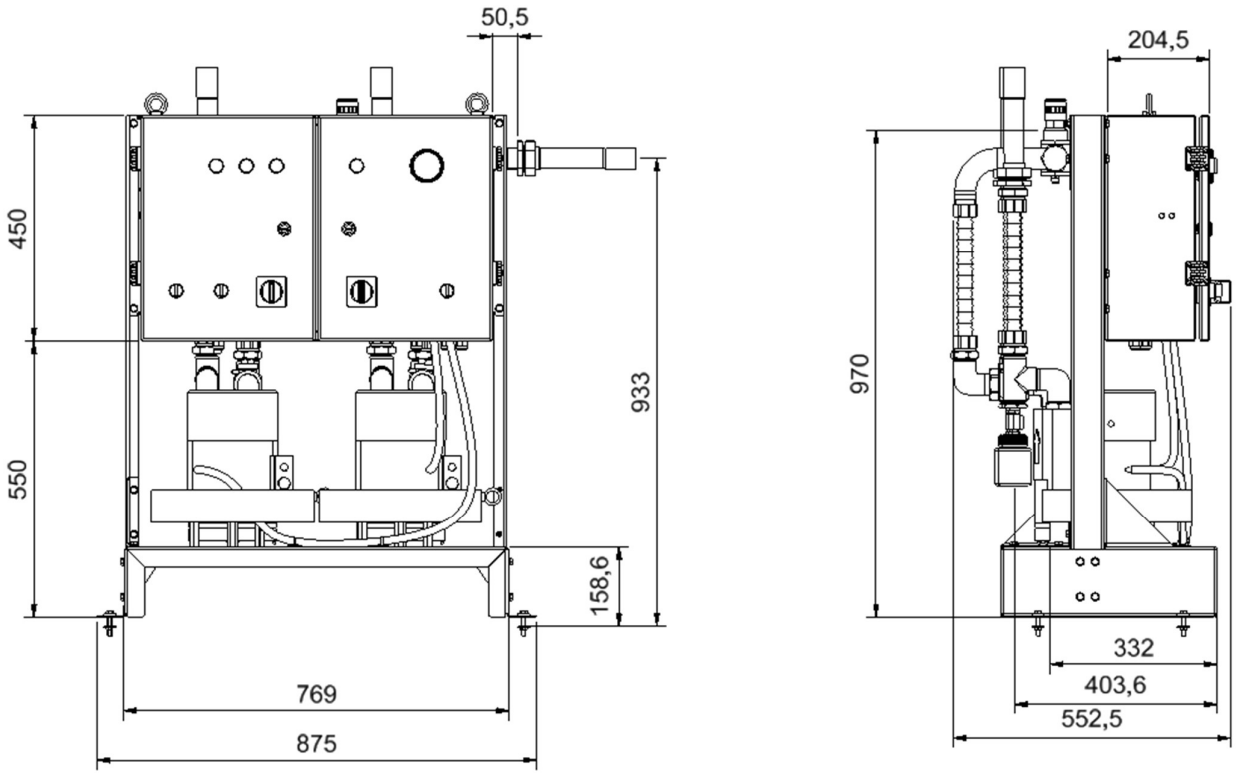


Figure 3-5 AGSS Cubicle Duplex

3.3 Installation procedure

1. **Locate the AGSS unit**:
   Move the frame mounted unit into position and drill the floor to receive anchor nuts. Fit mounting bolt anchor nuts into the floor. Choose a suitable position where support for the flexible pipe work can be fitted.
   Fit mounting bolts and washers and nuts and fully tighten down.
2. **Connect piping:**

	• Clean the piping system before connecting it to the AGSS unit. • If more convenient, the flow regulating valve may be swapped with the inlet suction side (see Installation proposal drawings, Alt. 1 and Alt. 2 - section Installation instruction.

Connect the distribution pipeline installation to the suction inlet. Connect the exhaust pipeline installation to the outlet connection, ensuring that the drain valve assembly is perpendicular to the floor.

The flexible hose will not support the weight of the connecting pipe work. The connecting pipe work must be secured to give added stability.

The diameter of the outlet pipe must be large enough to avoid pressure buildup. Back pressure has a negative impact on the performance of the pumps and must be limited as much as possible (max. 10 mbar).

3. **Heck earth continuity:**
   Ensure that the copper stub pipes which have been brazed to the pipeline system are earthed using suitable pipe earthing fixtures and sufficient sized cable.
4. **Check operation:**
   Check operation of exhauster unit in accordance with the commissioning procedure.
5. **Remote start switches:**
   Position remote switches in appropriate places and wire them in accordance with the relevant wiring diagram.
6. Glue the biohazard warning label to the drain flask.

3.4 Installation notification

1. The AGSS unit is applied to be used indoors.
2. The limitation of RH(relative humidity) needs no strict control.
3. The overvoltage category of AGSS unit is Category II.
4. The pollution degree of the environment where AGSS unit used is 2.
5. The comparison table of altitude and the FAD required.

Table 3-1 altitude and the FAD required table

Altitude/m	Atmosphere Pressure/bar	factor of FAD required
0	1	1.00
150	0.98	1.02
300	0.96	1.04
450	0.94	1.06
600	0.92	1.08
750	0.9	1.10
900	0.88	1.12
1050	0.86	1.14

4. AGSS remote start switch & indicator Panel

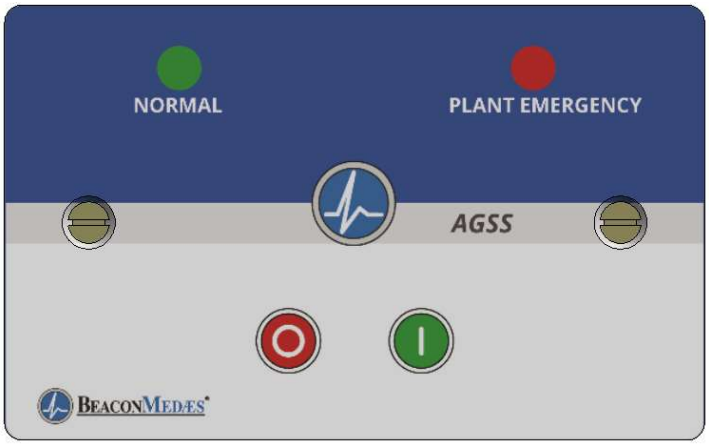


Figure 4-1 Remote control panel

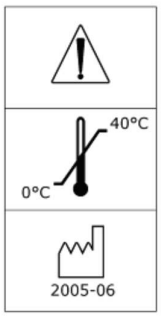
	Personnel must make themselves familiar with the contents of this manual and the function of the unit before installing, operating or maintaining.

Abbreviations

Abbreviation	Full Description	Abbreviation	Full Description
BS	British Standard	kPa	Kilo pascals
BSP	British Standard Pipe	Max	Maximum
V	Volt	Med	Medical
°C	Degree Celsius	m	Meter
ø	Diameter	mm	Millimeter
AGS	Anaesthetic Gas Scavenge	Min	Minimum
EN	European Standards	N2	Nitrogen
1st	First	N2O	Nitrous oxide
HTM	Health Technical Memorandum	NRV	Non-return valve
ID	Identification	OD	Outside Diameter
“	Inch	Kg	Kilograms
ISO	International Standard Organisation	%	Percentage

4.1 Safety storage and handling data

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 Limitations
- Date of Manufacture

Environmental Transport and Storage Conditions

All products are separately packaged and stored in controlled conditions.

Environmental Operating Conditions

Adverse environmental conditions and harsh abrasives or chemicals may cause damage to the unit.

Environmental Protection

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

Power source

The switches are powered using a set of 24V contacts from the AGSS motor control unit, located in the plant room.

Mode of operation

Continuous (equipment may be left switched on indefinitely).

Degree of protection against ingress of liquids

IPX0 (Not protected).

4.2 Description and operation

When remote start switches are installed and the motor control unit is ‘ON’ and selected to ‘AUTO’, the operation of any remote start switch will start the motor of the pump unit. This will be the pump selected as 'DUTY' on duplex pump assemblies. This will create the vacuum and suction required at the terminal unit(s).

The Button Start (see section 4.3) always illuminate when remote start switches are installed and the motor control unit is ‘ON’ and no matter selected to ‘AUTO’ or ‘Hand’.

There are 2 types of remote start switch, with varying light indications for alarm signals. All switches have a green indicator lamp, which should illuminate when the AGSS pump assembly is in normal operation. Duplex units incorporate 2 alarm conditions, which are red for 'Plant Emergency' and yellow for 'Plant Fault'. For simplex pump assemblies, there is a 'Plant Emergency' (red) indicator light.

Remote start switch panels are available for both surface and concealed (flush) mounting and require a 24V control and indication circuit supplied from a Beacon-Medæs anaesthetic gas scavenging disposal system. A typical system schematic is shown below:

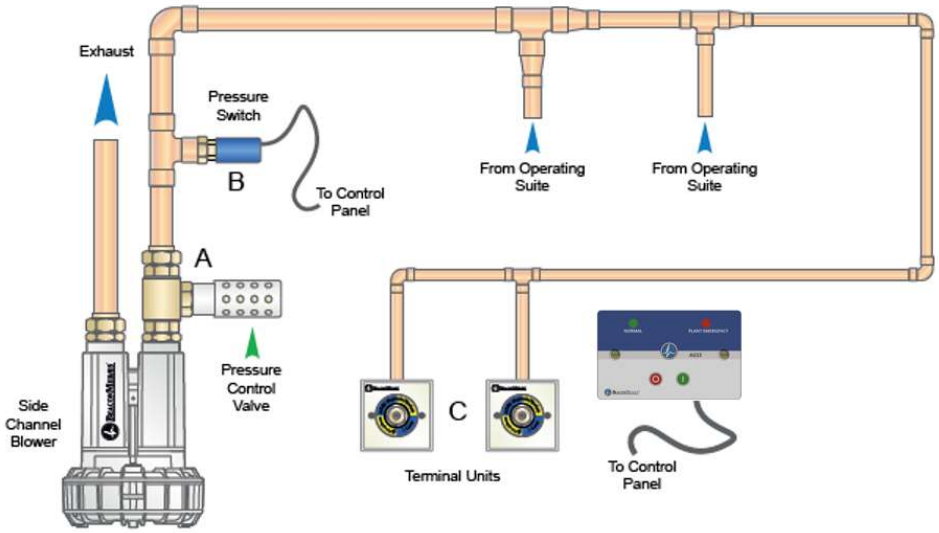


Figure 4-2

Cabling Requirements

There may be up to 8 remote start switches connected in the parallel wiring circuit. Cable should be 1mm2 copper conductors for runs of up to 100m. If runs are longer than this, then a larger cable size should be selected. For remote start switches, connected to a simplex plant, a 5-core cable is required, and for remote start switches for duplex systems, a 6-core cable must be used.

4.3 Installation of a remote start switch panel

WARNING

⚠	**Ensure that the electrical supply to the remote start switch panel/s is/are off and remains isolated during installation. This should be kept as such until commissioning is carried out.**

Switch panel. prepare

Remove both securing screws, fascia plate and switch assembly from the support box.

Support box. fit

Remove the four-corner screw knock out segments and the correctly positioned segments to enable the electrician's cables to enter the box. Secure the box with four woodscrews and raw plugs. Position cable retainer leaving sufficient length to allow connection to switch terminals. See figure 3 for installation details.

Switch panel. electrically connect.

Identify each wire in support box and connect to terminal block on rear of fascia plate in accordance with the wiring diagram. Connect earth stud on fascia plate. Fit fascia plate with the two securing screws. See specific wiring diagram for connection to motor control unit. See correct figure for the type of switch you are installing.

CAUTION

⚠	**Ensure that all switch panels are earthed. This can be done by either running an extra core from the starter/ isolator panel, or by locally earthing each switch panel.**

Switch panel. check operation.

Check operation of all remote start switch panels and indicator lights in accordance with the commissioning procedure.

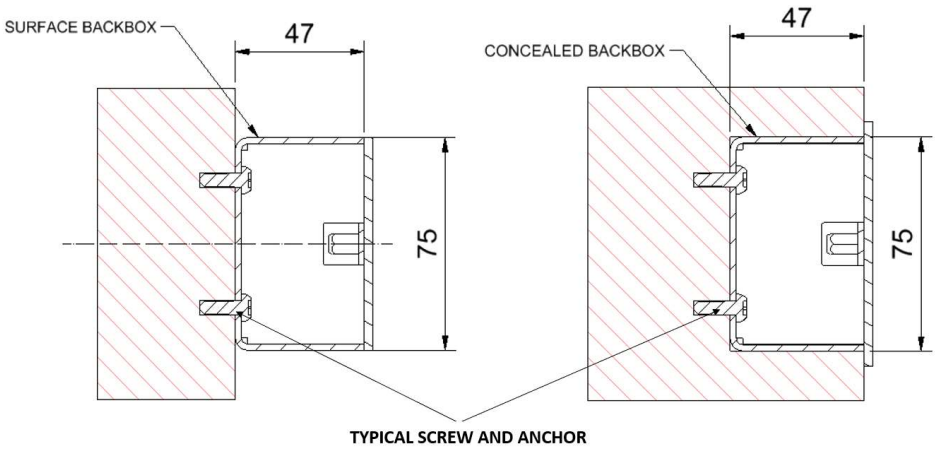


Figure 4-3

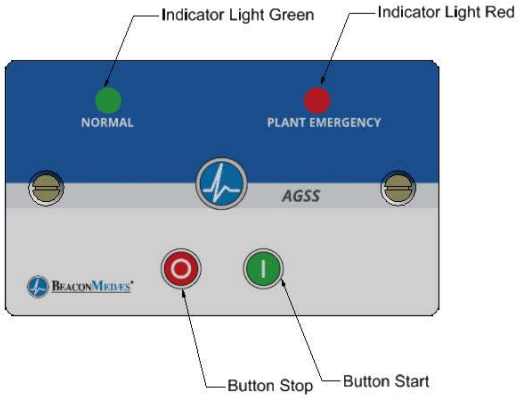


Figure 4-4

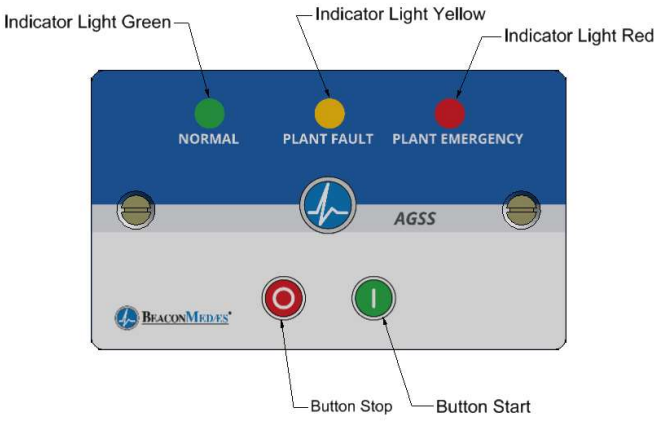


Figure 4-5

Figure 2 – Duplex/Cubicle Duplex Remote start switch diagram & connection details

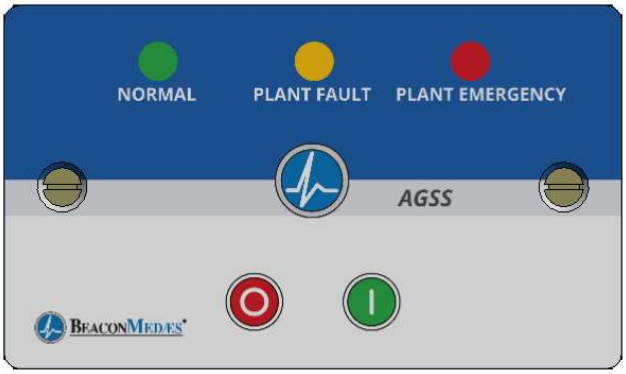
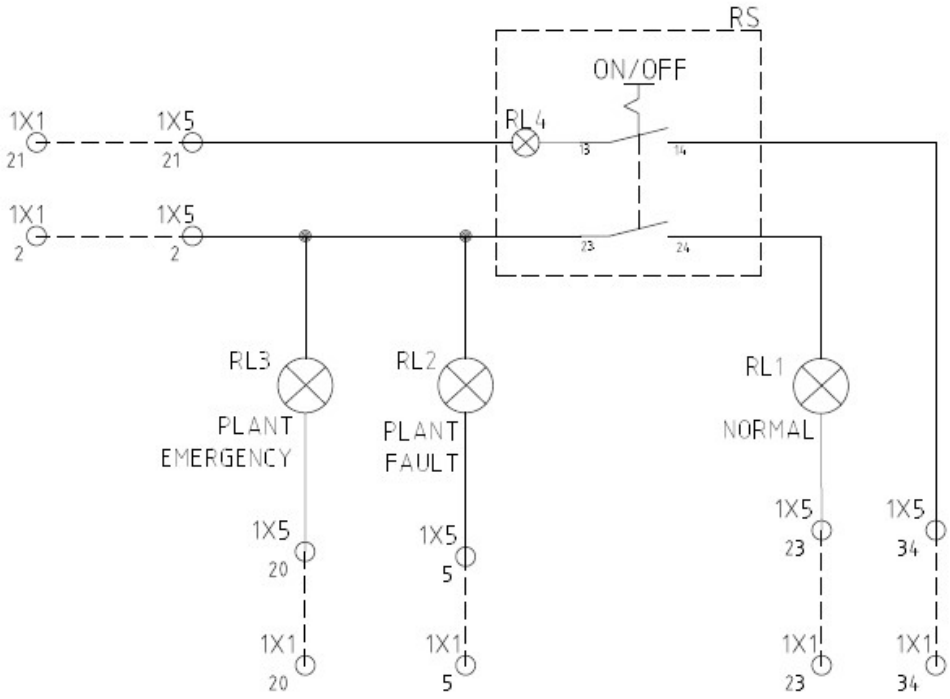


Figure 4-6 Front View



The Button Start (RL4) always illuminate when remote start switches are installed and the motor control unit is 'ON' and no matter selected to 'AUTO' or 'Hand'

Figure 4-7 Wiring Diagram

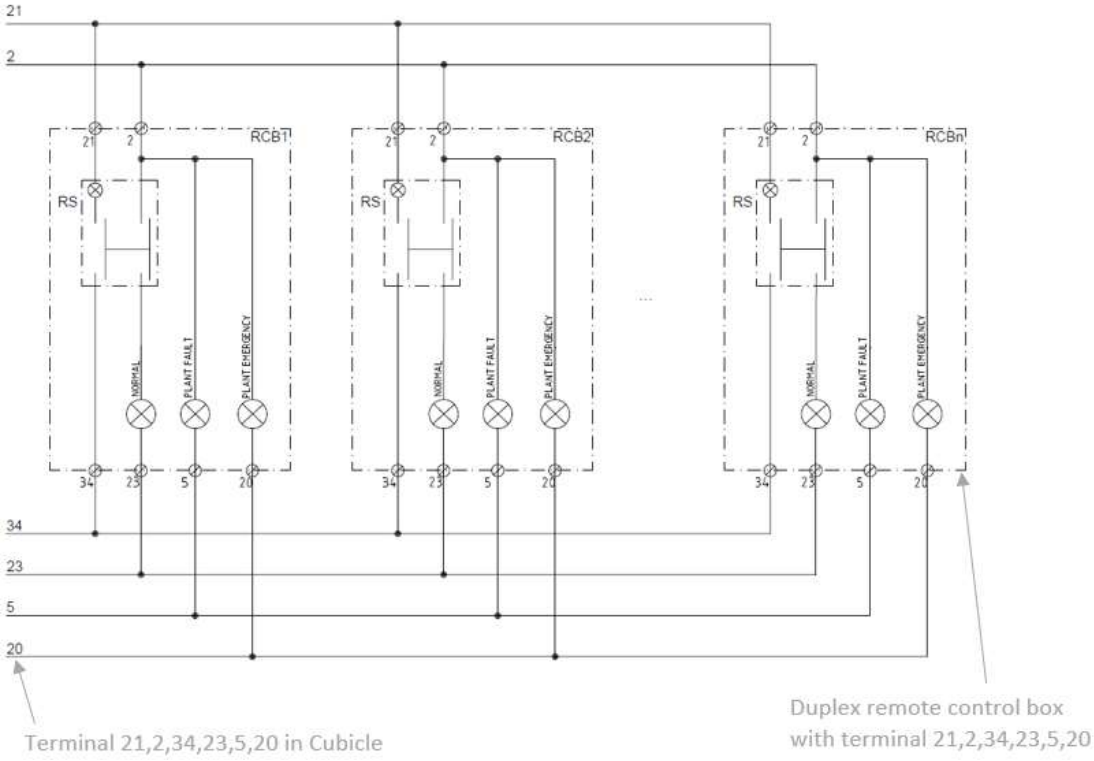


Figure 4-8 Parallel Installation

Figure 3: Simplex Remote start switch diagram & connection details

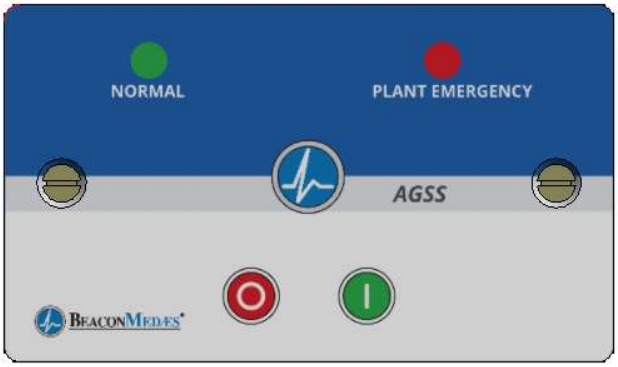
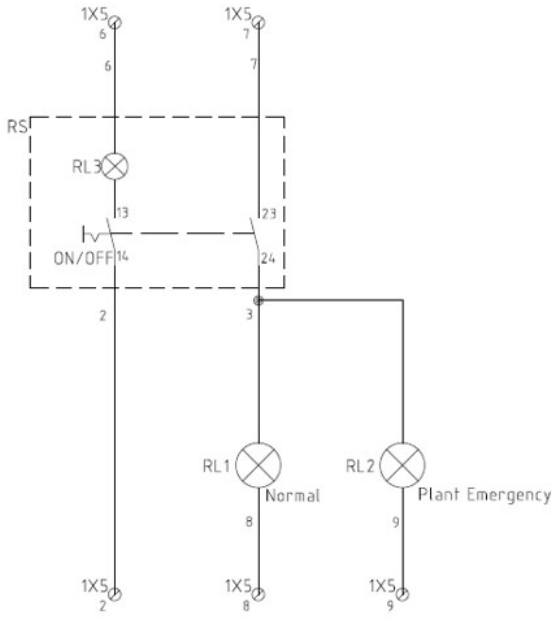


Figure 4-9 Front view



RL1: Normal RL2: Plant Emergency

RL3: Green button

The Button Start (RL3) always illuminate when remote start switches are installed and the motor control unit is 'ON' and no matter selected to 'AUTO' or 'Hand'

Figure 4-10 Wiring diagram

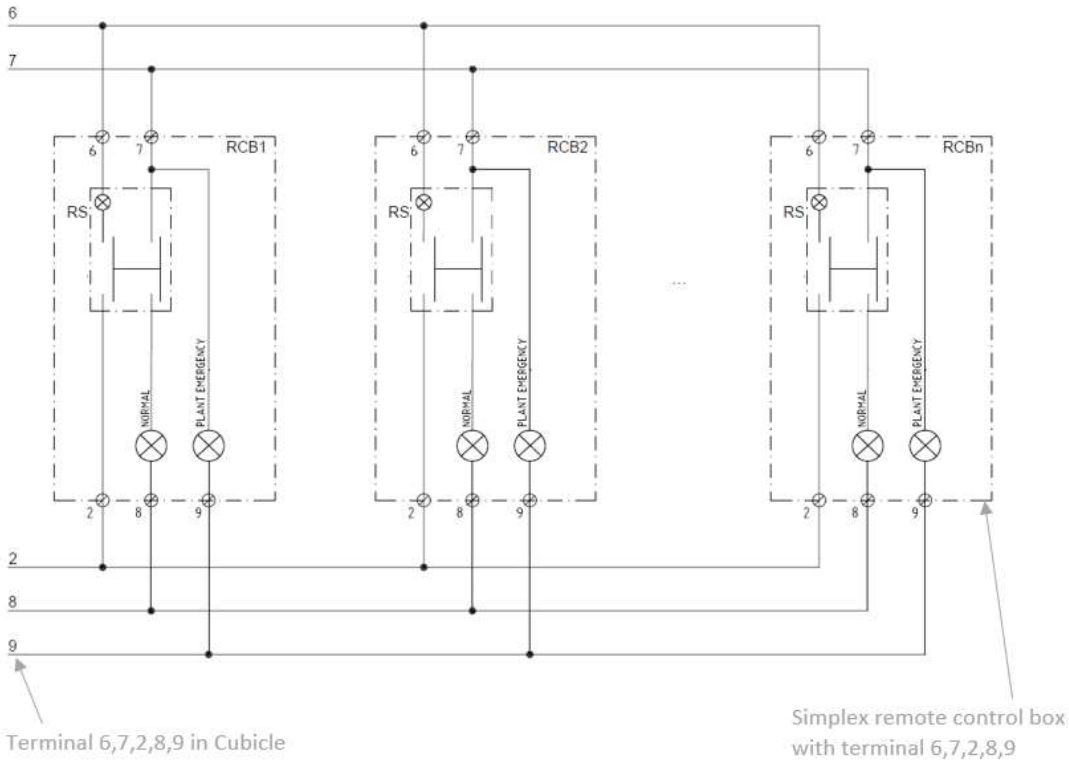
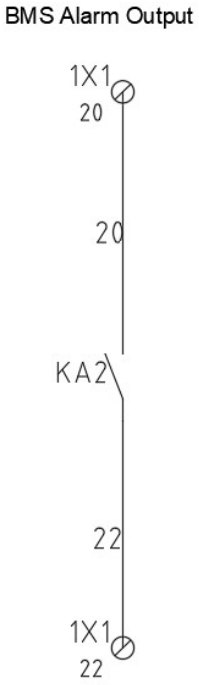
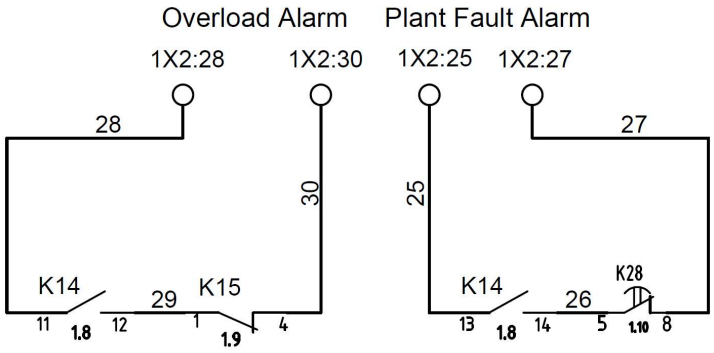


Figure 4-11 Parallel installation

4.4 BMS Connection



Simplex BMS control system



Duplex BMS control system

5. Commissioning

Introduction

Commissioning of the Anaesthetic Gas Scavenging disposal system must be carried out in full after initial installation. Appropriate sections of the commissioning procedure must be carried out post major component change, during the routine maintenance cycle or when the system has been shut down and unused for a period of 4 weeks. The object of commissioning is to ensure that all components are serviceable and that the system is adjusted to produce the correct design flow rates and performance figures. Personnel carrying out the commissioning procedure must be conversant with information contained within this manual and fully understand the layout of the actual installation to be commissioned. Commissioning is carried out in two parts.

Part 1

Part 1 of the commissioning procedure is carried out after installation of the pipeline distribution system and all first fix assemblies. This procedure is designed to prove the integrity of the pipeline installation in accordance with BS6834:1987 and BS EN ISO 7396-2 and consists of the following steps:

1. Check that the pipeline installation is correctly identified and labelled with identification tape at 10 metre intervals and on both sides of any dividing wall.
2. Remove second fix assemblies from all terminal units (if previously fitted).
3. Clean the piping: purge the pipeline installation to remove all particular matter.
4. Blank off all terminal first fix assemblies by fitting blanks.
5. Remove the flow regulating valve(s) from the distribution system (if previously fitted). Use one open pipeline to pressure test the system and blank off the remainder.
6. Disconnect the inlet pipeline to the exhauster unit and blank off the open pipeline connection. Pressure test the pipeline installation at 0.7 bar for 15 minutes and check that the pressure loss does not exceed 0.1 bar. Locate and rectify any defective pipe work as necessary and repeat the pressure test. Remove blank and re-connect inlet pipeline to the exhauster unit.
7. Re-fit all flow regulating valves to the distribution system. Check each valve adjuster for freedom of operation and re-fit silencers.
8. Remove blanks from all terminal units and re-fit second fix assemblies (if previously fitted).
9. On multi-system installations, carry out anti-confusion testing in accordance with HTM2022/02-01.

Part 2

Part 2 of the commissioning procedure is carried out on completion of all installation work. The procedure is designed to adjust and check system design performance and functionally test all components in accordance with BS6834:1987 and BS EN ISO 7396-2, and consists of the following operations:

Terminal units

1. Ensure that all AGSS disposal system terminal units are correctly identified and labelled.
2. Insert an AGSS probe into each terminal unit and check for smooth operation and effective thread action.
3. Ensure that the variable orifice of all terminal units is set to maximum prior to commencing the system balancing.
4. On completion of any adjustments to the variable orifice within the terminal units, ensure the locking grub screw is tightened in fully against the back of the terminal to ensure no wandering of the adjustment occurs.

Simplex exhauster units

1. Carry out continuity checks on all earth connections between the exhauster unit, starter/isolator panel and remote start switch panels.
2. Check tightness of the exhauster unit mounting bolts and the pipeline connections.
3. Check that the exhaust pipeline from the exhauster unit is routed to discharge the waste gas in a safe area outside the building.

4. Ensure that the electrical power supply is compatible with the exhauster unit. Check that the overload device in the starter/isolator panel is set to the full load of the exhauster unit. Ensure that correct size fuses are fitted and ensure that the electrical power supply is on.
5. Select exhauster unit isolation switch to ON, and check that POWER ON green indicator on starter/isolator panel is illuminated, and also check the vacuum metre if it works normally.
6. Momentarily select HAND/AUTO switch to HAND and check that the exhauster unit rotates in the correct direction. An arrow on the motor casing indicates the correct direction of rotation.
7. Select isolating ON/OFF switch to ON. Select HAND/AUTO switch to HAND and ensure that the exhauster unit operates. Check that the MOTOR RUNNING green indicator illuminates. Check that selection of either switch to OFF stops the exhauster unit.

	On all installations with a pressure switch, the green MOTOR RUNNING indicator will only illuminate when the system vacuum level achieves the preset value of the plant failure pressure switch.

8. Ensure that the exhauster unit runs smoothly without any unusual noise and switch it OFF.
9. Remove the terminal block cover on the exhauster unit motor and clip an ammeter onto the input cables. Run the exhauster unit and check that the current level does not exceed the design specification as indicated on the specification plate attached to the side of the exhauster unit. Switch OFF the exhauster unit, remove the ammeter and re-fit the terminal block cover.

	The above operation may be carried out in the starter/isolator panel by checking the current at the exhauster unit connection terminals if that is more convenient.

10. Leave isolator switch ON and HAND/AUTO selected to AUTO.

Duplex/Cubicle Duplex exhauster units

1. Repeat all steps detailed above on both exhauster units.
2. Designate a particular exhauster unit as “Duty” by selection of the duty selector switch.
3. Select a remote ON/OFF switch to ON, and check that the designated exhauster unit operates. Select remote ON/OFF switch to OFF.
4. Repeat Steps 2 to 3 with the other exhauster unit selected.
5. Select a remote ON/OFF switch to ON and run the “Duty” exhauster unit.
6. Select the “DUTY” exhauster unit HAND/AUTO switch to AUTO and ensure that the “Standby” exhauster unit automatically starts. If necessary, adjust the pump failure pressure switch.
7. Repeat Steps 5 and 6 with the other exhauster unit selected.

	Simulation of peak demand, resulting in both exhauster units simultaneously operating, is achieved by carrying out the procedure described below in section **Setting the duplex peak demand condition**.

Remote start switch panels

1. Operate the exhauster unit by selecting each remote ON/OFF switch to ON. Select each remote start switch in turn.
2. Ensure that at each selection the exhauster unit operates and that the green normal indicator illuminates only at the remote panel actually selected.
3. Ensure that the exhauster unit does not shut down until all remote ON/OFF switches are selected OFF.

	1. The above checks must be carried out on all remote start switch panels. 2. The green running indicator will only illuminate when vacuum levels are sufficient to operate the system failure pressure switch.

Simplex installation test

1. Ensure that the power, typically three phase 400V, and the earth is connected and the green POWER ON indicator is illuminated.
2. Release the front cover panel using the isolator switch. Connect the remote switch to terminals 2, 6, 7, 8, and 9. Close and lock the front panel.
3. Ensure the pressure switch is connected.
4. Check that the motor rotates in the direction shown by the arrow on the impellor casting.
5. Simulate normal running of the plant by relieving the vacuum.
6. Inspect the overall finish, all connections are tighten and the drain flask is fitted.
7. Test the Low Vacuum as follows
   - Open system pipe-work to free flow and check that the red SYSTEM FAILED / PLANT EMERGENCY indicator illuminates.
   - At the same time, the green NORMAL indicator in remote start switch panels distinguishes.

Duplex installation test

1. Ensure that the power, typically three phase 400V, and earth is connected and the green POWER ON indicator is illuminated.
2. Release the front cover panel using the isolator switch, ensure that the POWER ON indicator is out and lower the panel. Connect the remote switch to terminals 2, 5, 20, 21, 23 and 34. Close and lock the front panel. The green POWER ON indicator illuminates.
3. Set the DUTY SELECT control to Left and the HAND/AUTO switch to HAND.
   Check that the motor rotates in the direction shown by the arrow on the impellor casting.
4. Set the DUTY SELECT control to Right and the HAND/AUTO switch to HAND.
   Check that the motor rotates in the direction shown by the arrow on the impellor casting.
5. Fit a dead head and when vacuum reaches 65 mbar, check that the yellow STANDBY RUN / PLANT FAULT light illuminates and that after 10 seconds the red SYSTEM FAILED / PLANT EMERGENCY light illuminates. If necessary, adjust the timers. Open the dead head and check that the red PUMP FAIL light goes out and ensure that the standby pump runs for 30 minutes. Assuming the duty pump maintains the vacuum, check that the pump stops. If the duty pump trips the overload, the standby pump will maintain system vacuum.
6. Inspect the overall finish ensuring that all connections are tighten and the drain flask is fitted.
7. Test the Low Vacuum as follows
   - Open the system pipe-work to free flow and check that after 10 seconds, the PLANT FAULT/ PLANT EMERGENCY indicator illuminates.
   - At the same time, the green NORMAL indicator in remote start switch panels distinguishes.

Setting the system performance

When setting the system performance, it is necessary to use sufficient test probes to fit to all terminal units simultaneously. The test set and flow measuring device are also required to complete the following procedure.

1. Select isolator ON/OFF switch(es) to ON.
2. Select HAND/AUTO switch(es) to AUTO.
3. Select a convenient remote start switch to ON, and check that the exhauster unit is operating.
4. Fit a test probe, flow measuring device and test set to the terminal unit furthest from the plant.
5. Adjust the test probe variable orifice to provide a pressure drop of 1 kPa (measured on the test set).
6. Adjust the terminal unit orifice to provide a flow rate of 130 litres/min and recheck the pressure drop.
7. Close the test probe variable orifice and check that the maximum vacuum level does not exceed 200 mbar.
8. Re-set the test probe variable orifice to provide a 1 kPa pressure drop and check that the flow rate is 130 litres/min.
9. Repeat the process detailed is section 5 to 8 above for each terminal unit in succession back to the one closest to the plant, ensuring the terminal unit flow does not exceed 130 litres/min with a 1 kPa restriction.

10. Taking each terminal unit in turn, fit the test set and flow measuring device to the test probe. Reset the test probe variable orifice to provide a 4 kPa pressure drop and check that a minimum flow rate of 80 litres/min is achieved at each terminal unit. Adjust as necessary.
11. Repeat Steps 4 to 10 inclusive on each part of the distribution system until all flow regulating valves are correctly set.
12. Repeat Steps 9 to 10 inclusive on the entire installation with all terminal units in use.

	If more than one terminal unit is fitted in any one theatre, only one terminal unit in each theatre needs be flowing. Additional theatre terminal units should remain closed.

13. Repeat Steps 9 to 10 inclusive on the entire installation with only one terminal unit in use at any one time.

	a) With a Duplex installation, Step12 must be repeated with the system energized by each exhauster unit in turn. If the installation is such that both exhauster units are designed to operate simultaneously, Step12 should be carried out with both exhauster units operating. b) b. Should the above performance figures be unobtainable during the initial commissioning procedure, adjust the flow regulating valve to modify the line pressure accordingly keeping it below the 200 mbar limit. Additional flow regulating valves can also be installed to assist. This action should only be undertaken by Atlas Copco personnel. c) c. If the optional air inlet filter is used, repeat the final check with the filter installed.

Checking the alarm conditions (AGSS Simplex)

Isolate and open the panel, and open the MCB (Miniature Circuit Breaker) within the control panel. Switch a remote switch to ON. Check that the red SYSTEM FAILED indicator is illuminated when the vacuum level drops to lower than 65mbar.

Checking the alarm conditions (Duplex installation)

1. Isolate and open the panel, and open the three phase MCB (Miniature Circuit Breaker) in panel. Close the panel and switch isolator back to ON. Switch a remote start switch to ON and check that after 10 seconds, the red PLANT EMERGENCY indicator is illuminated on all remote switch panels when the pressure is abnormal. Isolate the panel and close the MCB's. Close the panel and switch back to ON.

Endurance test

The complete disposal system must be operated continuously for one hour with a selection of terminal units in use. Ensure that the system continues to operate within the design flow rate and the exhauster units operate effectively with no signs of overheating.

6. Operating Instructions

Remote switch control

Figure 6-1 Control panel AGSS Simplex

Figure 6-2 Control panel AGSS Duplex

Ensure that the electrical power supply to the starter/isolator panel is ON and select the isolating switch to ON.

Select the HAND/AUTO switch to AUTO and ensure that the “Duty” pump on a Duplex installation is selected. Control of the exhauster unit is by any of the remote start switches. Selection of a remote start will operate the exhauster unit and illuminate the respective indicator. The exhauster unit continues to operate until all remote start switches are selected OFF.

Continuous operation

With the electrical power supply ON and the isolating switch selected ON, the exhauster unit operates when the HAND/AUTO switch is selected to HAND. The exhauster unit continues to operate until selected OFF and the remote start switch panels are not operational.

	• The system exhaust outlet must not be obstructed, or overheating of the exhauster unit will occur. • Keep the cooling air inlet of the motor free from obstructions to prevent overheating of the exhauster motor.

7. Maintenance

Introduction

The Anaesthetic Gas Scavenging (AGS) disposal system is designed to operate with the minimum of maintenance, however minor routine maintenance operations are necessary to ensure total system reliability. Maintenance Engineers must fully understand the system and be conversant with the information contained in this manual. Correct tools, clean and serviceable must be available and the necessary spare parts obtained before commencing any maintenance operation.

	1. Obtain a work permit (if applicable) before commencing any work on the AGSS disposal system. 2. Before commencing any work on the exhauster unit, ensure that the isolating switch is OFF. If the maintenance period is prolonged, padlock the isolating switch in the OFF position.

Routine maintenance

Atlas Copco can provide a planned preventive maintenance contract suitably adapted to meet customer requirements. The following routine maintenance operations are the recommended minimum.

The longer interval checks must also include the shorter interval checks.

Weekly inspection

The weekly inspection consists of the following operations:

1. **Exhauster unit:**
   Visually inspect the exhauster unit and remove any accumulated dust from the casing surrounding area. Ensure that the motor air cooling inlet and exhaust are free from obstruction.
   Run the exhauster unit and ensure that its operation is smooth and free from any unusual noise levels. Drain and clean the drain assembly as necessary.
2. **Flow regulating valves:**
   Ensure that the air inlet to flow regulating valves are free from obstruction.

Monthly inspection

Visually inspect the flow regulating valves for security and freedom from damage. Ensure that the silencer air inlet is not obstructed.

Quarterly inspection

The quarterly inspection consists of the following operations:

1. **Exhauster unit:**
   Check and tighten exhauster unit mounting bolts.
   Check control of the exhauster unit by operating the isolating switch, HAND/AUTO switch and all remote start switches. Ensure that the indicator lights on the remote switch panels operate correctly. Check exhauster unit operates until all remote switches are selected OFF. With a Duplex installation both exhauster units and the automatic change-over facility should be functionally checked.

	To simulate a duty pump failure, the duty selector switch is used to designate an exhauster unit as “Duty”. Both isolator switches are selected ON and both HAND/AUTO switches are selected to AUTO. The “Duty” exhauster unit is operated by selecting a remote ON/OFF switch to ON. A simulated failure is produced by selecting the “Duty” exhauster unit HAND/AUTO switch to AUTO. The Standby exhauster unit should automatically operate.

2. **Flow regulating valve:**
   If the flow regulating valve is equipped with an air filter (optional), check the air filter element for cleanness. Replace as necessary.

3. **Drain valve assembly:**
   Visually inspect the drain valve assembly for serviceability and check that the transparent bowl is clean.

Dismantle, clean and replace as necessary in accordance with "Drain valve assembly" described below.

4. **Flexible pipework (where fitted):**
   Examine all flexible pipework in the plant room for signs of stress or damage and check for earth continuity.
5. **System performance:**
   With the AGSS disposal system activated, and using the test equipment inserted in only one terminal unit at a time, check that with a 1 kPa pressure drop the flow rate does not exceed a maximum of 130 litres/ min.
   Adjust the pressure drop to 4 kPa and check that the flow rate exceeds a minimum of 80 litres/min.

Annual inspection

The annual inspection consists of the following operations:

1. **Exhauster unit:**
   Remove exhauster unit inlet and outlet filters in accordance with above section Quarterly inspection, Exhauster unit. Clean the mesh disc and replace filters as necessary.
2. **Flow regulating valve:**
   - Clean the mesh disk
   - Replace the air filter element.
3. System performance:

With the disposal system activated, and using the test equipment inserted in only one terminal unit at a time, insert a test probe and check that with a 1 kPa pressure drop the flow rate does not exceed a maximum of 130 litres/min. Adjust the pressure drop to a 4 kPa and check that the flow rate exceeds a minimum of 80 litres/min.

Air filter assembly

Check the condition of the filter and avoid it from obstruction, and generally, the filter should be maintained every 4000hrs.

Drain valve assembly

The procedure to dismantle, clean, inspect and assemble the drain valve assembly is as follows:

1. Drain the assembly and release the pressure
   Close the valve above the drain assembly to isolate it from the disposal system.
2. Unscrew the transparent bowl from the lid and clean it.

	Use only soapy water to clean the transparent bowl. Solvents will cause damage.

3. Refit the drain assembly.
   Assemble transparent bowl and lid. Tighten assembly and turn on drain isolation valve.

Flow regulating valve

	The air inlet to the flow regulating valve must not be obstructed or the system integrity and performance will seriously be affected.

The flow regulating valve is only adjusted during commissioning and system performance checks. Routine maintenance consists of a visual inspection for security and damage. If valve performance is suspect it may be stripped, inspected for damage and replaced as necessary.

8. Trouble shooting

Introduction

Condition	Cause	Remedy
Overload device in starter / isolator panel trips.	No electric power.	The overload device monitors the electrical power supply input and phase imbalance. Check that the overload device is set to the full load current of the exhauster unit. Check the electrical power supply and 3- phase supply (if applicable).
	Exhauster unit filters are blocked.	Check the exhauster unit filters for blockage. Remove and replace the filters.
	The air inlet to flow regulating valve obstructed.	Check air inlet to flow regulating valve silencers for obstructions.
	Exhauster unit bearing failure or impeller seizure.	Remove the motor end cap and check for freedom of rotation. Replace exhauster unit as necessary.
Exhauster unit produces abnormal noise level.	Impeller seizure, bearing failure or motor fan cowl rub.	Remove exhauster unit motor end cap and check motor for freedom of rotation. Replace exhauster unit as necessary.
	Leaking/blowing pipe connections.	Carry out leak checks and tighten pipe connections.
System flow rate too low and cannot be reset.	Exhauster unit filters blocked.	Remove and inspect the exhauster unit filters for obstruction.
	Flow regulating valve not seating.	Inspect flow regulating valve for correct operations. Clean valve seat. Replace flow regulating valve as necessary.
	Exhaust pipeline blocked.	Check the exhaust pipeline for obstruction.
Exhauster unit gets overheated.	Inadequate ventilation around exhauster unit.	Clean the exhauster unit casing and surrounding area.
	Cooling air inlet and outlet ports are obstructed.	Check the cooling air inlet and outlet ports for obstruction.
	Accumulation of dust on exhauster unit cooling fins.	Improve ventilation to exhauster unit.
	Exhauster unit operating on a closed or partially closed system.	Check air inlets, exhaust pipeline and flow regulating valves for obstructions. Carry out a full system performance check.
Duplex installation - stand-by unit operates early or late.	Incorrect system failure pressure switch setting.	Check the pressure switch for correct settings.
Duplex installation - stand-by unit fails to operate.	Unserviceable pump failure pressure switch.	Change the pump failure pressure switch.
	Unserviceable electrical logic circuits within control panel.	Check the control panel for fault or replace the control panel.

9. Technical data

9.1 Reference conditions and limitations

Reference conditions

	Unit	Value
Relative inlet pressure	mbar(e)	-125
	psi	-1.8
Atmospheric pressure	mbar (a)	1013
	psi (a)	14.7
Air inlet temperature	˚C	20
	˚F	68
Exhaust back pressure	mbar(e)	0
	psi	0
Ambient temperature	°C	20
	°F	68

Limitations

	Unit	Value
Maximum atmospheric pressure	mbar(a)	1040
	psi(a)	15.1
Minimum atmospheric pressure	mbar(a)	800
	psi(a)	11.6
Maximum ambient temperature	°C	40
	°F	104
Minimum ambient temperature	°C	0
	°F	33.8
Maximum inlet temperature	˚C	40
	˚F	104
Minimum inlet temperature	˚C	1
	˚F	33.8
Maximum inlet pressure	mbar(e)	0
	psi(e)	0
Minimum inlet pressure	mbar(e)	-200
	psi(e)	-2.9
Minimum inlet pressure (AGSS 2210)	mbar(e)	-180
	psi(e)	-2.6
Maximum exhaust back pressure	mbar	10
	psi	0.15

9.2 Electrical data

AGSS Simplex

Cubicle	Type	Pump type	Voltage V	Freq Hz	Phase	Max. power kW	Nom current A	Over-load setting A	Supply cable (mm2)	Max fuse IEC A
4109501792	AGS-260-S/1	4RB210-0AA71	230	50	1	0.55	3	4	1.0	16
4109501792	AGS-520-S/1	4RB310-0AA71	230	50	1	0.94	9	12	1.0	16
4109501790	AGS-260-S/3	4RB210-0AP16	400	50	3	0.55	1.2	1.4	1.0	16
4109501790	AGS-520-S/3	4RB310-0AP16	400	50	3	0.55	1.6	1.4	1.0	16
4109501791	AGS-1300-S/3	2RB530-7AP36	400	50	3	2.2	4.6	5.5	1.0	16
4109501791	AGS-1560-S/3	2RB530-7AP36	400	50	3	2.2	4.6	5.5	1.0	16
4109501791	AGS-2080-S/3	2RB610-7AP16	400	50	3	2.2	4.35	5.5	1.0	16
4109501790	AGS-260-S/3	4RB210-0AP11	380	60	3	0.63	1.5	1.7	1.0	16
4109501790	AGS-520-S/3	4RB310-0AP11	380	60	3	0.63	1.5	1.7	1.0	16
4109501791	AGS-1560-S/3	2RB530-7AP31	380	60	3	2.55	5	6.7	1.0	16
4109501791	AGS-1820-S/3	2RB530-7AP31	380	60	3	2.55	5	6.7	1.0	16
4109501791	AGS-2600-S/3	2RB610-7AP11	380	60	3	2.55	5	6.7	1.0	16
4109501792	AGS-260-S/1	4RB210-0AA71	220	60	1	0.63	3	4	1.0	16
4109501792	AGS-520-S/1	4RB310-0AA71	220	60	1	1.1	9	12	1.0	16
41095017 91	AGS-2860-S/3	2RB730-0AP26	400	50	3	3	5.7	7.5	1.0	16

AGSS Duplex

Cubicle	Type	Pump type	Voltage V	Freq Hz	Phase	Max. power kW	Nom. Current A	Over-load setting A	Supply cable mm2	Max. fuse IEC A
4109501788	AGS-260-D/3	4RB210-0AP16	400	50	3	0.55	1.2	1.4	1.0	16
4109501788	AGS-520-D/3	4RB310-0AP16	400	50	3	0.55	1.6	1.4	1.0	16
4109501789	AGS-1300-D/3	2RB530-7AP36	400	50	3	2.2	4.6	5.5	1.0	16
4109501789	AGS-1560-D/3	2RB530-7AP36	400	50	3	2.2	4.6	5.5	1.0	16
4109501789	AGS-2080-D/3	2RB610-7AP16	400	50	3	2.2	4..5	5.5	1.0	16
4109501789	AGS-2860-D/3	2RB730-0AP26	400	50	3	3	5.7	7.5	1.0	16
4109501788	AGS-260-D/3	4RB210-0AP11	380	60	3	0.63	1.5	1.7	1.0	16
4109501788	AGS-520-D/3	4RB310-0AP11	380	60	3	0.63	1.5	1.7	1.0	16
4109501789	AGS-1560-D/3	2RB530-7AP31	380	60	3	2.55	5	6.7	1.0	16
4109501789	AGS-1820-D/3	2RB530-7AP31	380	60	3	2.55	5	6.7	1.0	16
4109501789	AGS-2600-D/3	2RB610-7AP11	380	60	3	2.55	5	6.7	1.0	16

AGSS Cubicle Duplex

Cubicle	Type	Pump type	Voltage V	Freq Hz	Phase	Max. power kW	Nom. Current A	Over-load setting A	Supply cable mm2	Max. fuse IEC A
4109 5018 91	AGS-260-D/3	4RB210-0AP16	400	50	3	0.55	1.2	1.4	1.0	16
4109 5018 91	AGS-520-D/3	4RB310-0AP16	400	50	3	0.55	1.6	1.4	1.0	16
4109 5018 99	AGS-1300-D/3	2RB530-7AP36	400	50	3	2.2	4.6	5.5	1.0	16
4109 5018 99	AGS-1560-D/3	2RB530-7AP36	400	50	3	2.2	4.6	5.5	1.0	16
4109 5018 99	AGS-2080-D/3	2RB610-7AP16	400	50	3	2.2	4..5	5.5	1.0	16
4109 5018 99	AGS-2860-D/3	2RB730-0AP26	400	50	3	3	5.7	7.5	1.0	16
4109 5018 91	AGS-260-D/3	4RB210-0AP11	380	60	3	0.63	1.5	1.7	1.0	16
4109 5018 91	AGS-520-D/3	4RB310-0AP11	380	60	3	0.63	1.5	1.7	1.0	16
4109 5018 99	AGS-1300-D/3	2RB530-7AP31	380	60	3	2.55	5	6.7	1.0	16
4109 5018 99	AGS-1560-D/3	2RB530-7AP31	380	60	3	2.55	5	6.7	1.0	16
4109 5018 99	AGS-2080-D/3	2RB610-7AP11	380	60	3	2.55	5	6.7	1.0	16

9.3 Performance data

AGSS Simplex,50 Hz

Type	Unit	AGS-260-S/1	AGS-520-S/1	AGS-260-S/3	AGS-520-S/3	AGS-1300-S/3	AGS-1560-S/3	AGS-2080-S/3	AGS-2860-S/3
Free air aspired at reference conditions	l/min	260	520	260	520	1300	1560	2080	2860
Motor power data based on shaft input at reference conditions	kW	0.55	0.94	0.55	0.55	2.2	2.2	2.2	3
Mean sound pressure level at reference conditions	dB(A)	53	55	52	55	64	64	68	68

AGSS Simplex,60 Hz

Type	Unit	AGS-260-S/1	AGS-520-S/1	AGS-260-S/3	AGS-520-S/3	AGS-1560-S/3	AGS-1820-S/3	AGS-2860-S/3
Free air aspired at reference conditions	l/min	260	520	260	520	1560	1820	2860
Motor power data based on shaft input at reference conditions	kW	0.63	1.1	0.63	0.63	2.55	2.55	2.55
Mean sound pressure level at reference conditions	dB(A)	53	55	52	55	64	64	68

AGSS Duplex,50 Hz

Type	Unit	AGS-260-D/3	AGS-520-D/3	AGS-1300-D/3	AGS-1560-D/3	AGS-2080-D/3	AGS-2860-D/3
Free air aspired at reference conditions	l/min	260	520	1300	1560	2080	2860
Motor power data based on shaft input at reference conditions	kW	0.55	0.55	2.2	2.2	2.2	3
Mean sound pressure level at reference conditions	dB(A)	53	55	64	64	68	68

AGSS Duplex,60 Hz

Type	Unit	AGS-260-D/3	AGS-520-D/3	AGS-1560-D/3	AGS-1820-D/3	AGS-2860-D/3
Free air aspired at reference conditions	l/min	260	520	1560	1820	2860
Motor power data based on shaft input at reference conditions	kW	0.63	0.63	2.55	2.55	2.55
Mean sound pressure level at reference conditions	dB(A)	53	55	64	64	68

9.4 Design data

Type	Unit	AGS-260-S/1 AGS-520-S/1	AGS-260-S/3 AGS-520-S/3	AGS-1300-S/3 AGS-1560-S/3	AGS-1820-S/3	AGS-2080-S/3 AGS-2600-S/3	AGS-2860-S/3	AGS-260-D/3 AGS-520-D/3	AGS-1300-D/3 AGS-1560-D/3	AGS-1820-D/3	AGS-2080-D/3 AGS-2600-D/3	AGS-2860-D/3
Service Connection (O.D.)	mm	42	42	54	54	54	54	42	54	54	54	54
	inch	1.7	1.7	2.1	2.1	2.1	2.1	1.7	2.1	2.1	2.1	2.1
-Length	mm	550	550	550	550	550	550	880	1135	1135	1135	1135
	inch	22	22	22	22	22	22	35	45.5	45.5	45.5	45.5
-Width	mm	460	460	460	460	460	460	620	620	620	620	620
	inch	18.5	18.5	18.5	18.5	18.5	25	25	25	25	25	25
-Height	mm	1050	1050	1050	1050	1050	1050	1050	1280	1280	1280	1280
	inch	42	42	42	42	42	42	42	51.5	51.5	51.5	51.5
Net mass (approx.)	kg	80	80	95	95	100	105	145	185	185	195	205
	lb	176	176	210	210	220	231	320	407	407	430	455

9.5 Pressure switch settings

The pressure switch settings are factory-set to -65mbar.

EC REP

Atlas Copco Airpower n.v.
Boomsesteenweg 957
2610 Wilrijk - Belgium

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Working to increase productivity through better solutions is our **commitment** to our customers. We start by fully supporting and improving existing products, then take it a step further, to deliver cutting edge technology through **innovation**. But the goal is not technology, it's the customer's bottom line and peace of mind.
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