

Anaesthetic Gas Scavenging (AGS) Plant HTM02-01/HTM2022 60 Hz/ISO7396-2

SPECIFICATION

Anaesthetic Gas Scavenging (AGS) Plant

The Anaesthetic Gas Scavenging (AGS) Plant shall comply with HTM 02-01, HTM2022 and either EN ISO 7396-2 or BS 6834. The AGS system shall be a dedicated, specifically designed active extraction and disposal system for waste anaesthetic gas. It shall provide a maximum flow rate of 80 l/min (EN ISO 7396-2) or 130 l/min (BS 6834) with a 1 kPa resistance to flow, and a minimum of 50 l/min (EN ISO 7396-2) or 80 l/min (BS 6834) with a 2 kPa (EN ISO 7396-2) or 4 kPa (BS 6834) resistance to flow at each terminal unit, irrespective of the number of terminal units in use. The AGS system shall use dedicated radial blowers in a simplex or duplex configuration. The AGS pump assemblies shall be skid mounted and included on the skid shall be the simplex or duplex pump(s), motor control unit(s) with starter/isolator, moisture drain flask and flexible connector(s) to connect the plant to the pipeline. Each pump shall include an electric motor and directly coupled impeller assembly. Impeller bearings in the pump(s) shall not require lubrication. The pump(s) shall be air cooled and rated for continuous operation.

Vacuum/Flow Regulating Valve

A vacuum/flow regulating valve shall be provided and positioned at the pump, comprised of a spring-loaded plate valve and inlet silencer. The valve should be changeable with the pipeline inlet in order to provide flexibility on site. The plate shall control air ingress into the pipeline system, thereby controlling the vacuum level within.

An optional air inlet filter shall be available should the air quality be poor/dusty offering further protection against dirt ingress into the pump.

Additional in line vacuum/flow regulating valves may be installed if required and shall be determined by the pipeline designer. The vacuum/flow regulating valve shall ensure a maximum vacuum of 200mb below atmospheric pressure is not exceeded and shall be factory preset at 150mb.

Control System

Each motor control panel shall incorporate an emergency panel isolation switch facility, which controls all electrical power to the exhaust unit, remote start switch panels and system indication lights. All control and status indication circuitry shall be limited to 24V a.c. A green 'POWER ON' indicator shall be fitted to the starter/isolator panel, and shall illuminate whenever power is available to the 24V control and indication circuit. A 'HAND/OFF/AUTO' switch shall be provided to control operation of the pump, running the pump continuously when selected to 'HAND'. When selected to 'AUTO', control of the pump shall be passed to the remote start switch panels. Operation of any of the remote start switches shall activate the pump. The pump shall continue to run until all remote switches are selected 'OFF'.

The starter/isolator panel shall incorporate a thermal protection overload device. The thermal protection overload device shall also monitor the electrical power supply and phase input. In the event of a fault, the overload device shall break the circuit to the pump, preventing operation until the system is manually re-set. Operation of the overload device shall also break the circuit to the remote start switch panels, extinguishing the green running indicator.

Simplex starter/isolator panels c/w alarm pressure switch and duplex units incorporate line pressure switch. This line pressure switch monitors vacuum levels and provides an additional control of the remote start switch and starter/isolator panel green 'RUNNING' indicators. The pressure switch shall also include a digital display providing an accurate readout of the vacuum level in the pipeline in order to assist with installation/commissioning and annual re-commissioning.

Simplex installations shall use remote start switches that include a red 'PLANT EMERGENCY' indicator. This indicator shall illuminate on all remote start switch panels if the vacuum level falls below the pressure switch set point level when the pump has been called, or if the overload trips. The on/off rocker switch shall include a green illuminated surround to indicate 'mains on'.

Duplex installations shall use remote start switches that include an amber 'PLANT FAULT' indicator. This shall illuminate, if either pump is set to 'HAND', or if one of the overloads trip. A red 'PLANT EMERGENCY' indicator shall also be provided and shall illuminate on all remote start switch panels if the vacuum level falls below the pressure switch set point level when the pump has been called. The on/off rocker switch shall include a green illuminated surround to indicate 'mains on'.

Where a duplex system is installed each pump shall be controlled by a separate motor control panel to enable servicing of either pump or control gear whilst maintaining system operation.

Volt free relay kits for replicating alarm conditions to BMS shall be available as an optional extra. To be either installed either at factory or as a retro-fit kit for onsite installation.

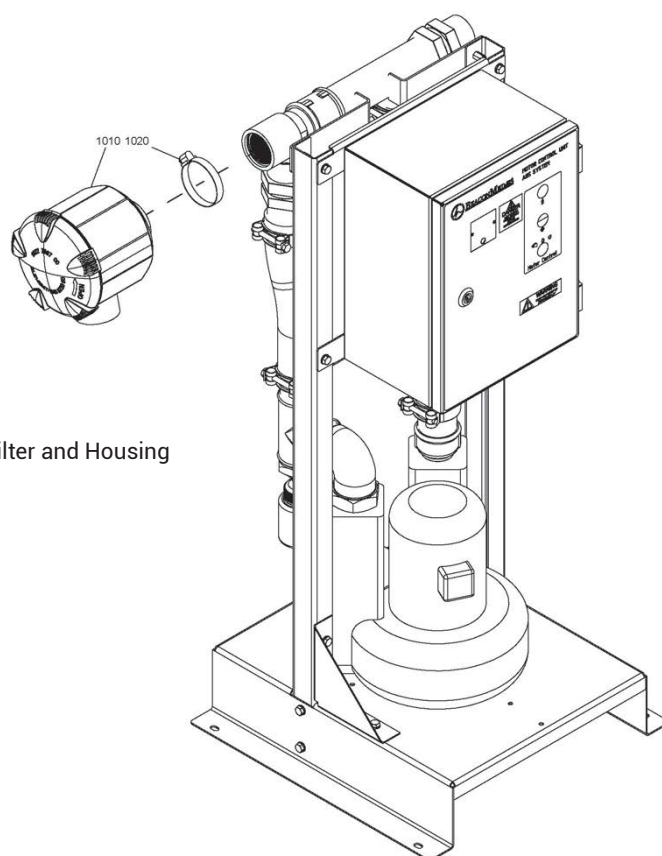
Terminal Units

Terminal unit shall be provided with an adjustable orifice to allow balancing of the terminal unit flows during commissioning. Venturi style terminal units are not acceptable. Terminal units shall not be connected to the medical vacuum system.

CE Marking

The standard range of BeaconMedaes Anaesthetic Gas Scavenging (AGS) Plant are 'CE' marked with approval from a notified body (more detailed information available on request).

Options	Part number
Inlet Filter & Housing - Factory	0000003819
Inlet Filter & Housing - Retrofit	8092130387



Inlet Filter and Housing

AGS Pump Assembly Details - Standard Models

Model Name	AGS-650-D/3	AGS-2210-D/3	AGS-3770-D/3	AGS-650-S/1	AGS-650-S/3	AGS-2210-S/3	AGS-3770-S/3
Part number	4153126100	4153126200	4153126300	4153125700	4153125800	4153125900	4153126000
Format	Duplex			Simplex			
Voltage (V)	380	380	380	220	380	380	380
Supply frequency (Hz)	60 Hz						
Phase ~	3	3	3	1	3	3	3
FLC/pump (A)	1.8	3.3	7.2	5.5	1.8	3.3	7.2
Motor start current (A)	10	23	48	18	10	23	48
Min. cable size (mm ²)	2.5	2.5	4	2.5	2.5	2.5	2.5
Motor rated fused supply/pump (A)	16	16	16	16	16	16	16
Length (mm)	900	900	900	525	525	525	525
Width (mm)	525	525	525	525	525	525	525
Height (mm)	1160	1160	1160	1160	1160	1160	1160
Weight (kg)	96	121	139	56	56	68	77
Motor plate (kW)	0.9	1.8	3.6	0.9	0.9	1.8	3.6
Noise level per pump @ 1m dB(A)	64	69	70	64	64	69	70
No. AGS Outlets Served	5	17	29	5	5	17	29
Connection (mm)	54	54	54	54	54	54	54

Note:

- Noise levels are averages, measured in accordance with ISO 517:1996 Free Air Aspiration and ISO 2151 Mean Sound Level
- Service connections are copper to BS EN 13348 and relate to the external pipe diameter

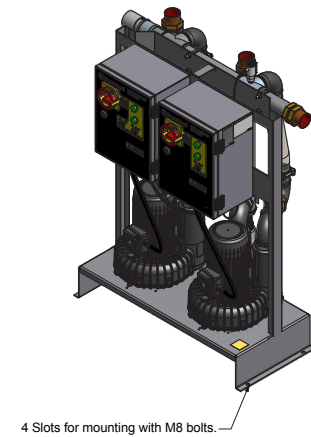
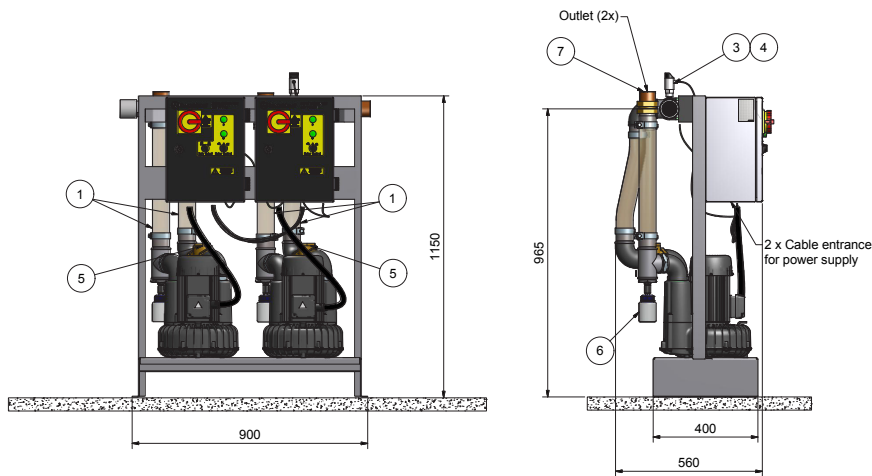
AGS Pump Assembly Details - Models Including Additional BMS Alarm Contacts

Model Name	AGS-650-D/3 - BMS	AGS-2210-D/3 - BMS	AGS-3770-D/3 - BMS	AGS-650-S/1 - BMS	AGS-650-S/3 - BMS	AGS-2210-S/3 - BMS	AGS-3770-S/3 - BMS
Part number	4153 1261 00/BMS	4153 1262 00/BMS	4153 1263 00/BMS	4153 1257 00/BMS	4153 1258 00/BMS	4153 1259 00/BMS	4153 1260 00/BMS
Format	Duplex			Simplex			
Voltage (V)	380	380	380	220	380	380	380
Supply frequency (Hz)	60 Hz						
Phase ~	3	3	3	1	3	3	3
FLC/pump (A)	1.8	3.3	7.2	5.5	1.8	3.3	7.2
Motor start current (A)	10	23	48	18	10	23	48
Min. cable size (mm ²)	2.5	2.5	4	2.5	2.5	2.5	2.5
Motor rated fused supply/pump (A)	16	16	16	16	16	16	16
Length (mm)	900	900	900	525	525	525	525
Width (mm)	525	525	525	525	525	525	525
Height (mm)	1160	1160	1160	1160	1160	1160	1160
Weight (kg)	96	121	139	56	56	68	77
Motor plate (kW)	0.9	1.8	3.6	0.9	0.9	1.8	3.6
Noise level per pump @ 1m dB(A)	64	69	70	64	64	69	70
No. AGS Outlets Served	5	17	29	5	5	17	29
Connection (mm)	54	54	54	54	54	54	54

Options	Part number
BMS Retrofit - Simplex	8092289514
BMS Retrofit - Duplex	8092289522

Typical AGS Pump Assembly Layouts

Duplex Pump Assembly



Installation instruction 1.
-In order to avoid transportation damage the pressure switch & seal (ref 3&4) are placed inside electrical cubicle.

Installation instruction 2.
The AGS air inlet can be re positioned by swapping the copper stub (item 7) and regulating valve (item 2) as indicated by Alt.1 or Alt.2.
Use PermaBond MH052 on joints.

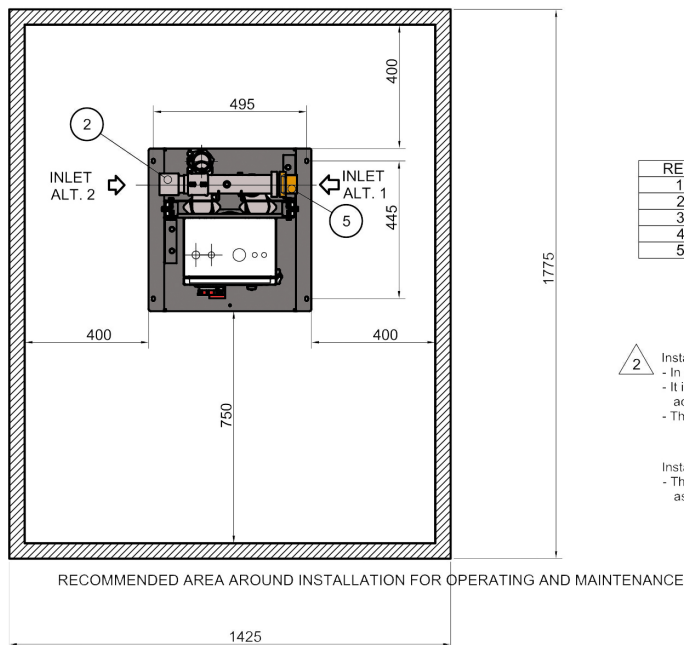
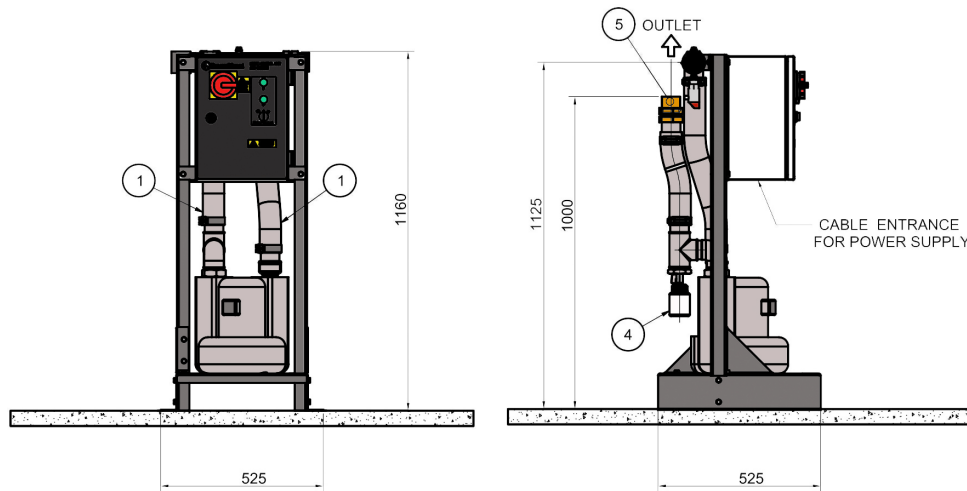
Notes.

1. AGS to be isolated prior to leak test of the network piping.
2. Cleaning of the piping network is required prior to start up of the AGS.
3. Biological warning notice to be fixed to each drain flask (item 6) at installation.
4. The device must be installed with or connected to other medical devices or equipment in order to operate as required for its intended use.

Ref	Description
1	Flexible hose
2	Flow regulating valve
3	Pressure switch
4	Seal
5	Non return valve
6	Drain flask
7	Copper stub pipes 54mm dia.

Typical AGS Pump Assembly Layouts

Simplex Pump Assembly



REF.	DISCRIPTION
1	FLEXIBLE HOSE
2	FLOW REGULATING VALVE
3	PRESSURE SWITCH
4	DRAIN FLASK
5	COPPER STUB PIPES Ø54MM

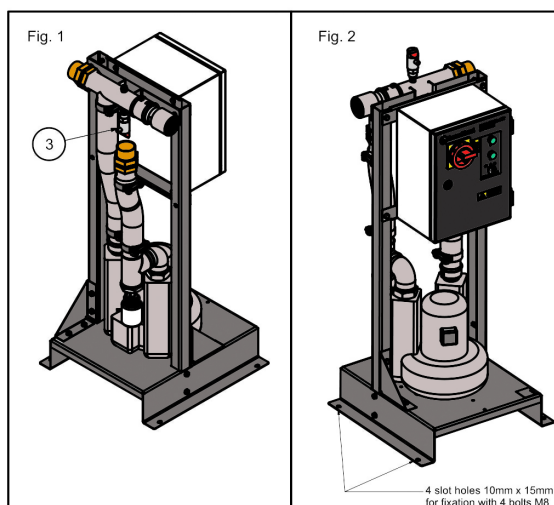


Installation Instruction 1 :

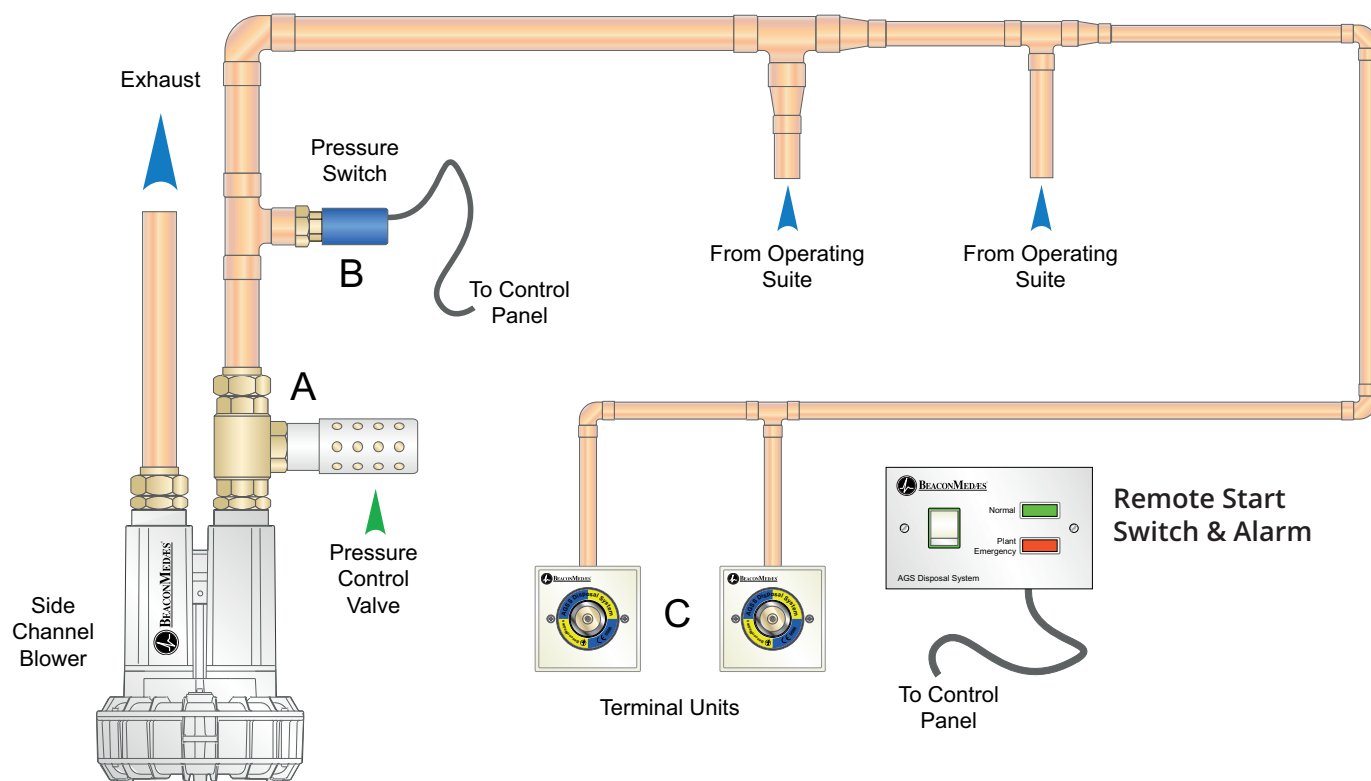
- In order to avoid transport damage the pressure switch (Ref.3) has been installed upside down as shown in Fig. 1
- It is preferred to mount the switch on top of the inlet pipe with its display pointing towards the cubicle to improve accessibility and read-out (Fig. 2). Sparingly use Loctite 577 at the conical thread of the nipple.
- The read-out should now be correct. If not, the parameter "diS" needs to be reprogrammed to the value "d2".

Installation Instruction 2 :

- The AGS air inlet might be chosen left or right by swapping the copper stub with the flow regulating valve as indicated by ALT.1 or ALT. 2.



Typical AGS System Schematic - Simplex



Terminal Units	Part number
AGS Gem Revolve 1 st fix - Mod/Wall	8102340218
Gem Revolve Curved Bedhead 1 st fix assembly	8102340238
Gem Revolve Mod/Wall 1 st fix assembly - Extended Rear Entry	8102340988
Gem 2 nd fix assembly - BS	8102340208
Anti-microbial Trim Plate c/w Bezel and Screws	2006149
White Plastic Fascia c/w Bezel and Screws	1826849
Gem Plaster Box & Surface Mounting Kit	8102340419

Accessories	Part number
AGSS Exhaust Silencer 1.5"	1824664
AGSS Exhaust Silencer 2"	1824665
AGSS Exhaust Silencer 2.5"	1824666
AGSS Exhaust Silencer 3"	1824667
AGSS Exhaust Silencer 4"	1824668
AGS Terminal Unit Adjustment Tool	2004569
Kit to Convert Fixed Orifice Plug to an Adjustable Orifice	2004826
AGSS Receiver & Transfer Hose	2001001
Rail clamp with 'V' slide	1828441
AGSS Flow Regulating Valve - Round body	2001931
AGSS Gas Discharge Notice	1825193
Duplex AGSS Remote start switch - Surface Mount	2005146
Duplex AGSS Remote start switch - Flush Mount	2005147
Simplex AGSS Remote start switch - Surface Mount	2005148
Simplex AGSS Remote start switch - Flush Mount	2005149
Illuminated Rocker Switch (Converts HTM2022 Switch To HTM02-01)	2005145

