

MGE



SAM 12, SAM 14, SAM 15, SAM 16

Medical Suction Unit

Operating and Maintenance Manual



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Dear Customer,

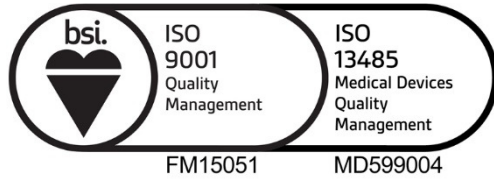
We take this opportunity to thank you for purchasing a **SAM** Medical Suction Unit. Please read the operating instructions and listed precautions thoroughly before attempting to operate the unit. MG Electric manufactures its range in accordance with the requirements of BS EN ISO 9001 and BS EN ISO 13485

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Return of Medical Equipment

Should you wish to return any equipment to MG Electric (Colchester) Limited (MGE), or one of our designated distributors, Health Service Guideline HSG (93) 26 Decontamination of equipment prior to inspection, service or repair) must be adhered to. Failure to follow this guideline will invalidate any warranty claims and result in the equipment being destroyed.



Definition of symbols used in these instructions:



The Instruction for use must be referred to!



Temperature Limits



CLASS II equipment



Humidity Limits



Manufacturers' details and date of manufacture



Type B applied part



Electricity Warning

Ingress Protection
IP 34 3 - Ingress Protection against particulates
4 - Ingress Protection against water.



Safety Warning



Disposal in accordance with directive 2012/19/EU

1. SAFETY INSTRUCTIONS

The safety of the patient and suction unit operator are the first priorities. It is therefore vital that the following precautions are strictly observed:



Never operate a **SAM** suction unit without an MGE filter capsule.

The filter capsules are made to withstand limited use and cannot be reused. Reuse of such devices can be dangerous for both patient and operator.

A hydrophobic filter must be fitted internally to prevent liquid passing through to the pump. Hydrophobic filters only work once and should be replaced immediately it becomes wetted.

No modification of this equipment is allowed.

Only original and approved spare parts and collection systems must be used with all **SAM** suction units – failure to use original or approved spares will invalidate the warranty and may cause injury or damage the unit.

No liability can be accepted by MG Electric for units affected by the occurrence of overflow when Disposable Liner Systems are being used.

Other than for routine daily procedures, any maintenance or repairs to MG Electric products must be carried out by fully trained and qualified Electro-Biomedical engineer/technician (EBME) or an authorized MG Electric dealer. Such persons are to be familiar with the relevant standards, rules, accident prevention regulations, and operating conditions as a result of their training, experience, and instruction. They are qualified to carry out the required activities and in doing so recognize and avoid potential hazards. All testing on SAM units should be in accordance with ISO 10079-1

Contamination may be present on any components. When cleaning or replacing any part of the **SAM** unit appropriate protective clothing and gloves **MUST** be worn to avoid contamination. Disposal of contaminated parts must be according to local protocols.

Store the manual in a safe place, so that it is available to the trained personnel at all times.

All collection containers must be securely mounted when in use.

The overflow valve may not operate fully against frothing. To prevent frothing anti-foam agent maybe used.

When replacing a full collection container, be aware of its weight and ensure handling the container is comfortable to avoid the possibility of spillage.

Transport of the **SAM** unit with a full jar attached is not advised.

Solvent-based cleaning agents or abrasive cleaners must not be used on any **SAM** units. Do not wash any **SAM** units under running water or submerge in water.

Any dismantling and re-assembly of this equipment - for whatever purpose - must be followed by testing in accordance with the manufacturers' recommendations as specified for monthly maintenance.



ELECTRICAL WARNING

Always electrically isolate the **SAM** unit from the mains power supply before carrying out any cleaning, maintenance or repairs. Electrical isolation of the **SAM** unit is by removal of the mains power cable from the mains power supply.

Never operate a **SAM** suction unit in the presence of flammable gas such as anaesthetic agents.
This is an Explosion hazard!

Ensure the power cable does not create a trip hazard or is subject to damage.

The suction pumps may only be opened by qualified technical personnel. Electric shock hazard!

2. GENERAL DESCRIPTION

SAM 12 - General-purpose high vacuum medical suction unit, incorporating one collection container of 2L capacity. Designed for all medical procedures that require an adjustable high vacuum. For domiciliary use or use within a healthcare facility. These units are not intended for field and transport use.

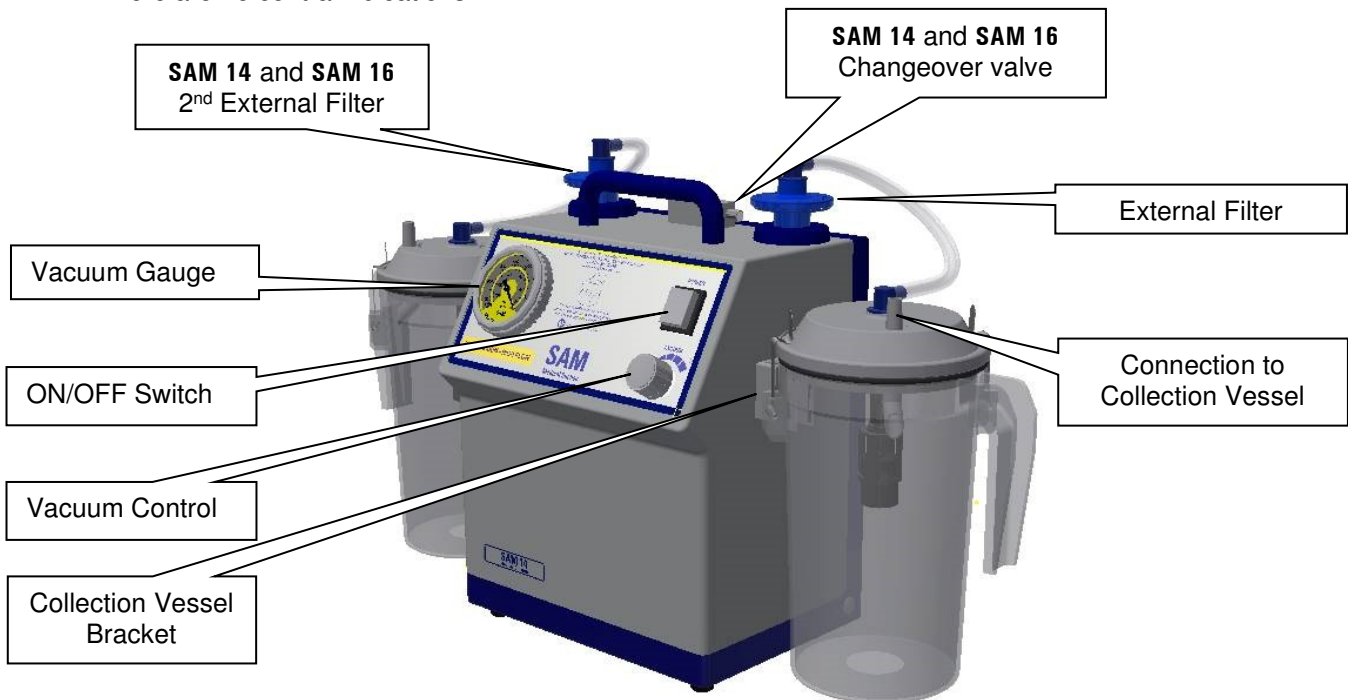
SAM 14 - General-purpose high vacuum medical suction unit, incorporating two collection containers of 2L capacity. Designed for all medical procedures that require an adjustable high vacuum. For domiciliary use or use within a healthcare facility. These units are not intended for field and transport use.

SAM 15 - High vacuum surgical suction unit, incorporating one Intra-Uterine (IU) collection container of 2L capacity. Designed for use in intra-uterine procedures. Collection containers fitted with a wide bore top complete with specimen filter. For theatre or ward use within a healthcare facility. These units are not intended for field and transport use.

SAM 16 - High vacuum surgical suction unit, incorporating two Intra-Uterine (IU) collection containers of 2L capacity. Designed for use in intra-uterine procedures. Collection containers fitted with a wide bore top complete with specimen filter. For theatre or ward use within a healthcare facility. These units are not intended for field and transport use.

The **SAM 14** and **SAM 16** are fitted with two collection containers and a simple changeover valve. This valve enables one container to be emptied and replaced while the other remains in use.

There are no contra-indications.



3. INSTRUCTIONS FOR USE

3.1 Before Operating Unit

BEFORE operating your new SAM unit please read the following instructions carefully.

Become thoroughly familiar with the operation and maintenance of the unit before using and note the information on the control panel and rear of the unit. Only persons trained in its use should operate the unit.

Check that the voltage supply is as printed on the rating plate fitted to the back of the SAM unit.



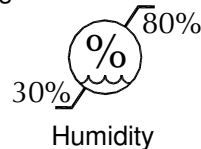
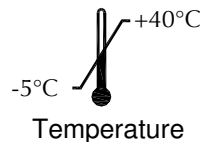
Warning! Always electrically isolate the SAM unit from the mains power supply before carrying out any cleaning, maintenance or repairs. Electrical isolation of the SAM unit is by removal of the mains power plug from the mains power supply.

3.2 Unit Set Up

- Connect the desired collection system securely in place on the bracket(s) fitted to the side of the unit. More detail can be found later in this section.
- Connect the desired equipment to the patient inlet tube on the collection container top.
- Connect the unit to the power supply, check label on rear of unit for correct ratings. Do not obstruct access to the mains power supply and ensure the power cable does not create a trip hazard or is subject to damage. Ensure the exhaust outlet on the side of the unit is kept clear of any restriction.
- Switch the SAM unit on by pressing the green rocker switch so that it illuminates. The lamp indicates the SAM unit is operating and ready for use.


3.3 Operating Environment

Operation of this equipment must be within the following ambient condition



Warning! Never operate a SAM suction unit in the presence of flammable gas such as anaesthetic agents. This is an Explosion hazard!

3.4 Gauge (Manometer) - Indicated Vacuum

The unit has a gauge fitted to allow the vacuum to be set at a pre-determined level and monitored during use. To achieve the desired degree of vacuum, occlude the tubing fitted to the patient inlet on the collection container top, and read the indicated vacuum on the gauge. Adjust the vacuum control until the required degree of vacuum is achieved. (Turning the knob clockwise  increases the vacuum). The SAM unit is now set to operate at the selected vacuum.

3.5 External Filter



Warning! Never operate a SAM suction unit without a MG Electric filter capsule.

The filter capsules are a sealed disposable bacterial or hydrophobic filter capsule. Both the bacterial and hydrophobic filters have bacterial retention of 99.9999% ensuring safety and hygiene for patient and operator. The 0.3 micron particle retention of the filter medium also gives not less than 99.985% Dispersed Oil Particulate (D.O.P.) and so provides an effective barrier against possible aerosol contamination. The hydrophobic filter also has an integrated micro porous membrane on the rear of the filter medium which allows a clear flow of air through one way and an excellent block against any accidental back flow the other. The external filters are fitted between the vacuum connector and the filter capsule mount and can be either a bacterial or hydrophobic filter. The connector, mount, and 'O'

rings are autoclavable. However, the filter capsules are 'Single Patient Use' and must not be autoclaved. The external filter must be changed with every patient and renewed in accordance with the recommendations detailed in the 'Daily Procedures'.



Warning! The filter capsules are made to withstand limited use and cannot be reused. Reuse of such devices can be dangerous for both patient and operator.

3.6 Internal Filter

The **SAM** unit must have fitted internally a hydrophobic filter capsule to prevent ingress of foreign material into the pump. The hydrophobic filter prevents costly pump damage as well as additional protection against contamination from liquids being sucked through due to jar overflow. Liquid sucked through to the pump motor will cause damage and invalidate the warranty. The filter is disposable and must not be autoclaved but renewed in accordance with the recommended maintenance program.



Warning! A hydrophobic filter must be fitted internally to prevent liquid passing through to the pump. Hydrophobic filters only work once and should be replaced immediately it becomes wetted.

3.7 Fluid Collection Containers

The silicon service tube ($\varnothing 6\text{mm}$ I/D with 3mm minimum wall thickness) must be connected between the filter and the vacuum port on the collection container. The tube has an elbow connector on each end for fitting to the filter and for fitting to the 'VACUUM' port of the **SAM 2** collection container. The silicon tubing used in conjunction with this equipment is a replaceable item. It should be changed regularly according to the level of usage and where it has become in any way contaminated or damaged.



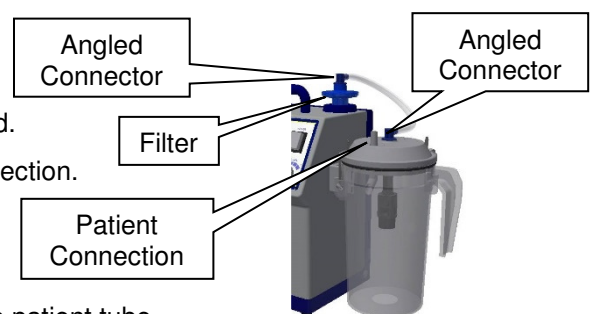
Warning! All collection containers must be securely mounted when in use.

An anti-foam agent may be put into the fluid collection container, without disinfectant solution, before use to reduce the possibility of frothing. It should not however, be placed into the container for extended storage periods.

3.7.1 SAM 2 Collection System

The **SAM 2** collection container is fitted as standard to all **SAM** units. They are fully autoclavable Polyester Carbonate (P.E.C.) collection containers, with integral handle and for IU applications, with a wide bore. The container is connected to the **SAM** unit via a moulded vacuum connector of the same type as that fitted to the filter capsules.

- Place the collection container in the bracket. Connect the tubing from the filter to the angle connector in the centre of the lid.
- Connect the patient tube to the patient connection.
- Turn on the **SAM** suction unit.
- Check the desired vacuum is established.
- After the suction procedure – disconnect the patient tube.



The **SAM 2** is fitted with an overflow valve designed to shut off the vacuum to the **SAM 2** collection container when the fluid level reaches 1750ml. When the valve operates, the **SAM 12** and **SAM 15** units must be switched off and the full container replaced by an empty one. The **SAM 14** and **SAM 16** have two **SAM 2** collection containers and where appropriate the full container may be replaced by the second container through operation of the changeover valve located on the top of the unit. It should be noted that even after the valve has shut off, fluid might continue to be drawn into the container to an extent dependent upon the level of vacuum in the container at the time when the valve closes.



Warning! The overflow valve may not operate fully against frothing. To reduce frothing anti-foam agent may be used.



Warning! When replacing a full collection container, be aware of its weight and ensure handling the container is comfortable to avoid the possibility of spillage. Transport of the **SAM** unit with a full jar attached is not advised.

3.8 Disposable Liner Systems

The **SAM** range has been designed to accept various disposable liner systems. When fitted, protection of the unit against overflow is entirely dependent upon the correct use of the appropriate liner in accordance with the manufacturers' instructions.



Warning! No liability can be accepted by MG Electric for units affected by the occurrence of overflow when Disposable Liner Systems are being used.

3.8.1 VacSax suction system

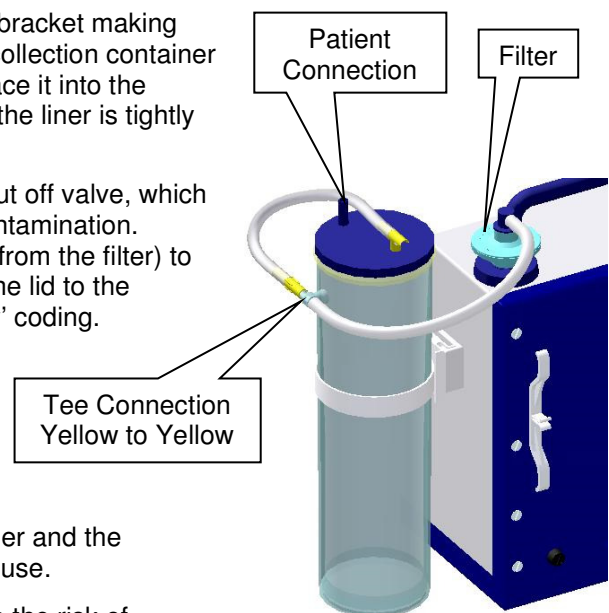
- Place liner into collection container and push firmly.
- Push the taper connector on the vacuum tubing from the suction controller into the vacuum port with a twisting motion.
- Connect the patient tubing firmly to the patient port to ensure a good fit.
- Turn on the **SAM** unit.
- Confirm suction is present at the patient tube by occluding the patient tube end.
- After the suction procedure – disconnect the patient tube and fit stopper located on rim into the port.
- Turn OFF the **SAM** unit, and remove the liner for disposal.



The collection container may be sterilised by autoclaving at 121°C or by washing with water based disinfectants. Before autoclaving, rinse the collection container well to remove any detergent.

3.8.2 Abbott Receptal Disposable Suction System

- Place the collection container in the bracket making sure that the tee connection on the collection container is tight. Fully extend the liner and place it into the collection container. Make sure that the liner is tightly secured in the collection container.
- The liner incorporates an internal shut off valve, which protects the vacuum source from contamination. Connect the vacuum source tubing (from the filter) to one side of the tee connection and the lid to the other side using the 'yellow to yellow' coding.
- Connect the patient tube to the patient connection, either directly or by using the optional elbow piece, which prevents kinking of the patient tubing.
- Turn on the **SAM** unit to inflate the liner and the collection container is now ready for use.
- For maximum safety and to minimise the risk of contamination when dismantling, the fluid level must not rise above the 'DO NOT FILL ABOVE THIS LINE' mark on the collection container.



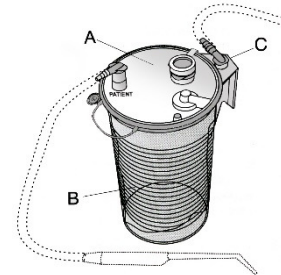
- At the end of the procedure, the **SAM** unit should remain switched on while the patient suction tubing is removed from the patient port and discarded.
- Disconnect the liner lid tubing from the tee connection and immediately reconnect the yellow connector to the patient port with a push and twist motion.
- Turn the vacuum off and use the thumb tab to remove the liner for disposal.



Warning! The liner lid tubing must not be used as a carry handle.

3.8.3 Serres Suction Bag System

- The system comprises the suction bag (A), the collection container (B), and the angle connector (C).
- Place the collection container (B) in the bracket. Connect the tubing from the **SAM** filter to the angle connector (C).
- Place the suction bag into the collection container ensuring bag tail is not trapped between the lid and collection container.
- Turn on the **SAM** unit.
- Install the suction bag by using the vacuum – Occlude the patient connection and simultaneously press lightly from the middle of the lid.
- Establish the desired vacuum and ensure the bag is fully inflated.
- Connect the patient tube to the patient connection.
- After the suction procedure – disconnect the patient tube and close the connection with the plug provided on the lid.
- Turn OFF the **SAM** unit, and remove the liner for disposal.



If necessary, the collection container only, may be washed (85°C) and autoclaved (121°C). Before washing, disconnect the angle connector. If autoclaving, rinse the collection container well to remove any detergent.

3.9 Effect of altitude

Altitude effects all vacuum pumps and it should be noted that there will be a reduction in the maximum achievable vacuum / negative pressure level equivalent to approximately 3.5% per 300m (approximately 1000ft) rise in altitude.

3.10 Cleaning Procedure



Warning! Contamination may be present on any components. When cleaning or replacing any part of the **SAM** unit appropriate protective clothing and gloves **MUST** be worn to avoid contamination. Disposal of contaminated parts must be according to local protocols.



Warning! Always electrically isolate the **SAM** unit from the mains power supply before carrying out any cleaning, maintenance or repairs. Electrical isolation of the **SAM** unit is by removal of the mains power cable from the mains power supply.



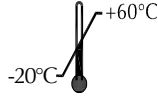
Warning! Solvent-based cleaning agents or abrasive cleaners must not be used on any **SAM** units. Do not wash any **SAM** units under running water or submerge in water.

To clean the outside case of the **SAM** suction unit, disconnect the unit from the power supply, wipe over with a clean damp cloth or use an appropriate mild disinfectant solution. Following the manufacturers' instructions on cleaning product, and avoiding excessive moisture.

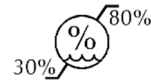
3.11 Transport

The **SAM** unit will be adequately boxed and protected to ensure no damage occurs during normal transportation of goods, providing the ambient conditions are within the following parameters:

Temperature max +60°C min -20°C



Humidity max +80% min +30%

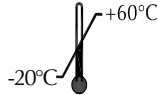


There are no restrictions for land, air, or sea transport.

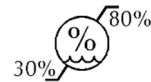
3.12 Storage

SAM units must be stored in a dry, dust-free, well ventilated environment. The storage environment should not exceed the temperature and humidity conditions stated below. Avoid direct sun or UV exposure and shield nearby sources of heat. The equipment should be stored in its original packaging providing no damage is evident. Protect against ground moisture by storing on a shelf or wooden pallet.

Temperature max +60°C min -20°C



Humidity max +80% min +30%



3.13 Long Term Storage

When the units are held in storage, or used very infrequently, the three-monthly maintenance period may be extended to twelve months. Particular care must be taken when inspecting flexible components, such as valves, diaphragms, to ensure embrittlement has not occurred.

SAM units should be stored in a cool, dry environment, as stated above.

3.14 Instructions by Medical Staff to Patients

When the equipment is required by a patient for home use, Medical Staff must fully instruct the patient on the safe operation of the equipment. In the event of equipment contamination or failure, the patient must be advised to switch off the unit and contact the authority from which the unit is loaned.

3.15 Troubleshooting

Problem:	Cause:	Solution:
No power to unit	Unit not turned on	Turn Main Switch „ON/OFF” ON
	Wrong operating voltage	Check mains voltage output
	Mains not connected	Connect mains cable
	Defective Fuse	Check fuse and replace if indicated
Pumps fail to run	Leak in vacuum system	Check all connection and tubing.
	Collection Jar is full	Replace Jar
Pump suction power too weak	Vacuum leaks	Check all seals and hoses. Make sure Lid is securely on Jar.
	Vacuum not to required setting	Turn vacuum control clockwise until the desired suction power is reached
	Tubing is plugged, bent and/or disconnected	Replace tubing if plugged and eliminate any bends
	Internal hydrophobic filter is blocked or wet	Replace internal hydrophobic filter. – Must be done by EBME

If a problem cannot be solved, contact a fully trained and qualified engineer (EBME), authorized MG Electric dealer or MG Electric (sales@mgelectric.co.uk).

4. MAINTENANCE



Warning! Other than for routine daily procedures, any maintenance or repairs to MG Electric products must be carried out by fully trained and qualified engineers (EBME) or an authorized MG Electric dealer. Such persons are to be familiar with the relevant standards, rules, accident prevention regulations, and operating conditions as a result of their training, experience, and instruction. They are qualified to carry out the required activities and in doing so recognize and avoid potential hazards. All testing on **SAM** units should be in accordance with ISO 10079-1



Warning! No modification of this equipment is allowed.



Warning! Contamination may be present on any components. When cleaning or replacing any part of the **SAM** unit appropriate protective clothing and gloves **MUST** be worn to avoid contamination. Disposal of contaminated parts must be according to local protocols.



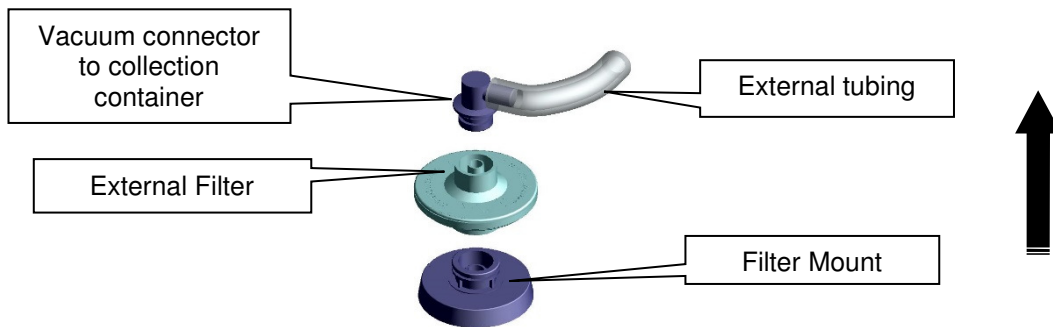
Warning! Any dismantling and re-assembly of this equipment - for whatever purpose - must be followed by testing in accordance with the manufacturers' recommendations as specified for Monthly maintenance.



Warning! Isolate the **SAM** unit from the mains power supply before carrying out any maintenance or repairs. Electrical isolation of the **SAM** unit is by removal of the mains power cable from the mains power supply.

4.1 Daily Procedures

- The external filter capsule should be changed after any of the following:
 - Each day's use.
 - If it becomes wetted by froth.
 - After aspiration of any infective material.
 - Before being used on a new patient.



- Examine the collection container for damage. Replace if necessary.
- Examine the external tubing for ageing, damage, or contamination. Replace if necessary using equivalent tubing ($\text{\O}6\text{mm}$ I/D with 3mm minimum wall thickness).

4.2 Monthly Maintenance

- Carry out the daily maintenance procedure.
- Check the vacuum and the flow at the collection container top.
- With the collection container empty and the vacuum control valve set to maximum, switch on the unit and read the indicated vacuum on the gauge. Occlude the suction inlet (Patient connection) on the collection container top and note the time taken for the gauge to indicate an increase to 450mm Hg (60 kPa) vacuum. This time should not exceed 10 seconds.
- The gauge should continue to rise and stabilise to indicate the maximum vacuum available, and this should be not less than 590mm Hg (78.7 kPa).
- Replace the exhaust filters in the exhaust outlet housing located on the side of the casing and marked 'Exhaust Outlet'.

4.3 Three Monthly Maintenance

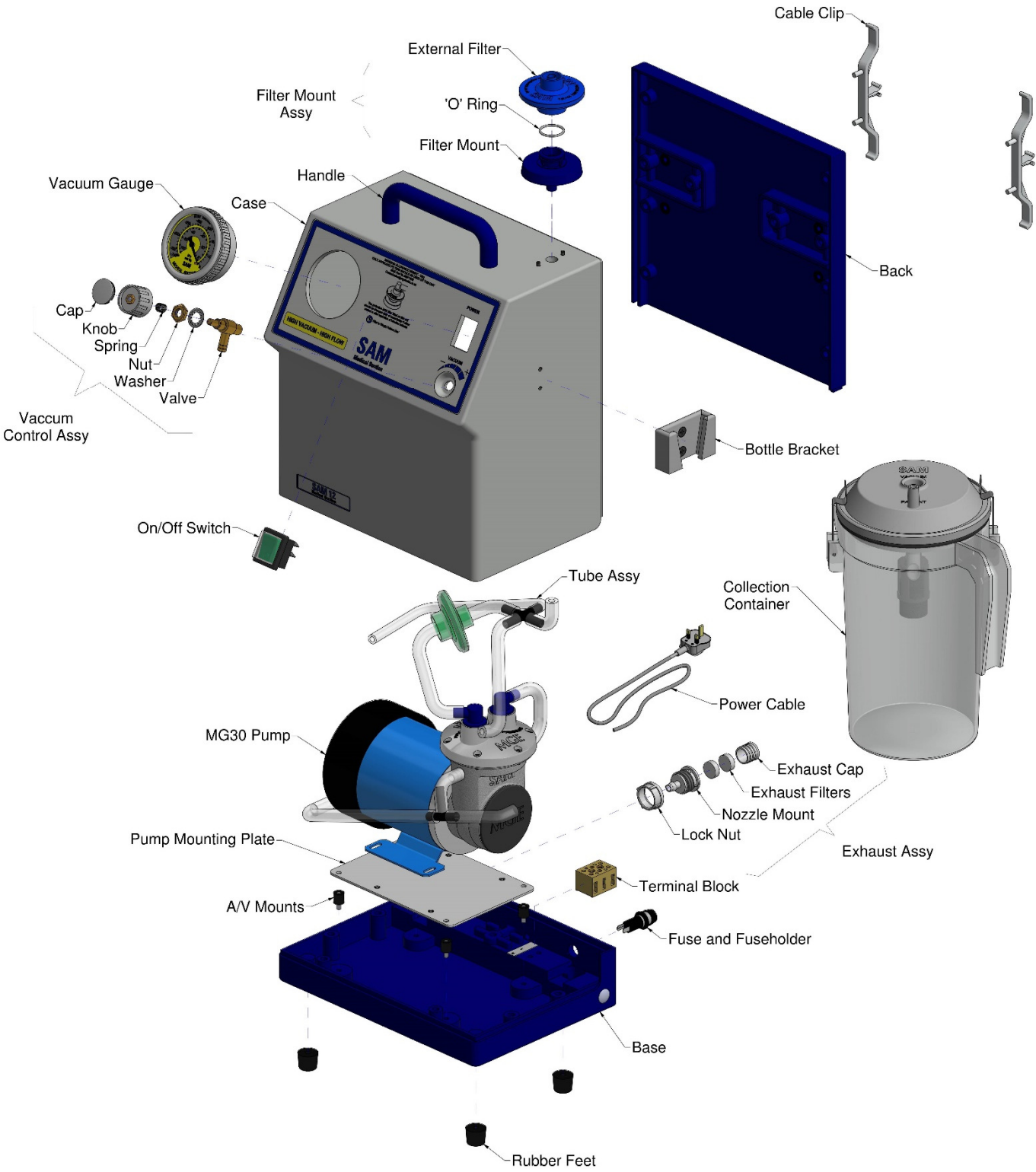
- Carry out the monthly procedure. Poor performance of the unit would indicate the internal pump requires maintenance



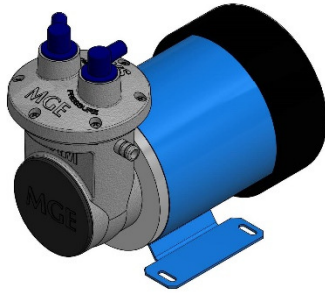
Warning! Always electrically isolate the **SAM** unit from the mains power supply before carrying out any cleaning, maintenance or repairs. Electrical isolation of the **SAM** unit is by removal of the mains power cable from the mains power supply.

- Remove the back cover.
- Check the internal and external tubing for ageing or wear. Replace with equivalent tubing where necessary. Tubing to gauge Ø5mm I/D, wall thickness min 2mm, all other tubing on the **SAM** unit Ø6mm I/D, wall thickness min 3mm.
- Replace the hydrophobic filter. Details in section 4.6 Replacing the Internal Hydrophobic Filter and Tubing
- Check the internal wiring for ageing or wear. Replace with equivalent material and terminations where necessary.
- Examine the mains cable for wear or damage and replace if necessary, using equivalent cable.
- Replace the back cover. Do not overtighten the rear cover fixings. (Recommended torque 20 cNm)
- Examine the overflow valve float mechanism (**SAM 2**) to ensure that this has free movement.
- For **SAM 14** and **SAM 16** - Check the function of the changeover valve.
- Check the vacuum and flow performance at the collection container as previously described

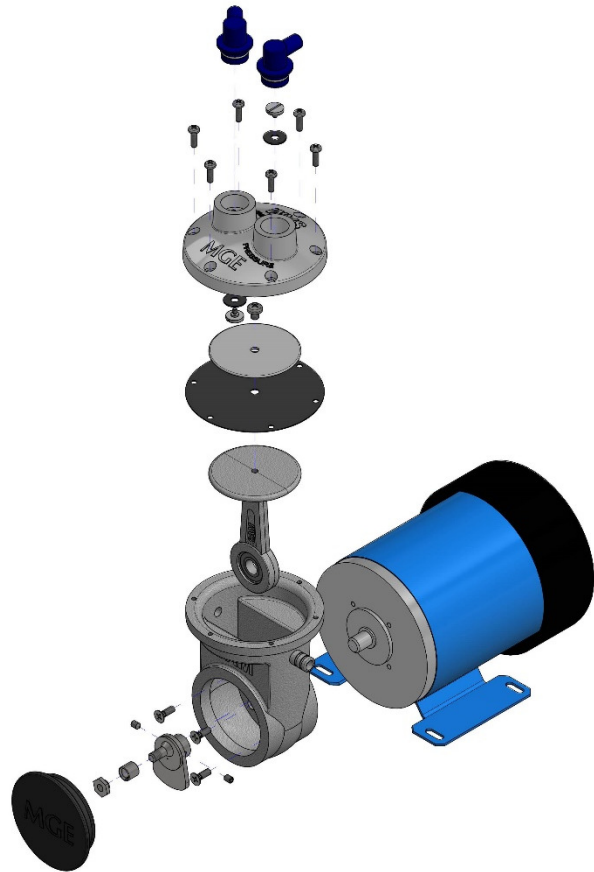
4.4 General Layout



4.5 MG30 Pump



MG30 Pump Complete
230V 50/60H



- Remove the pump from the **SAM** unit.
- Remove the pump head from the pump casing and examine the diaphragm for signs of wear.
- Check the balance within the connecting rod for excessive movement. Replace the connecting rod and balance if necessary.
- Remove both pump head nozzles from the pump head.
- Remove the transfer valves.
- Clean the valve seats and check the valves for signs of wear.
- Replace any worn or damaged components as necessary and re-assemble.
- Replace the pump back into the **SAM** unit and re-connect the internal tubing.

Note: Replacement kits are available to change an old LQ25 Pump with a new MG30 Pump. The MG30 pump is a drop in replacement of the MQ25 pump. Details found in Options and Recommended Spares section.

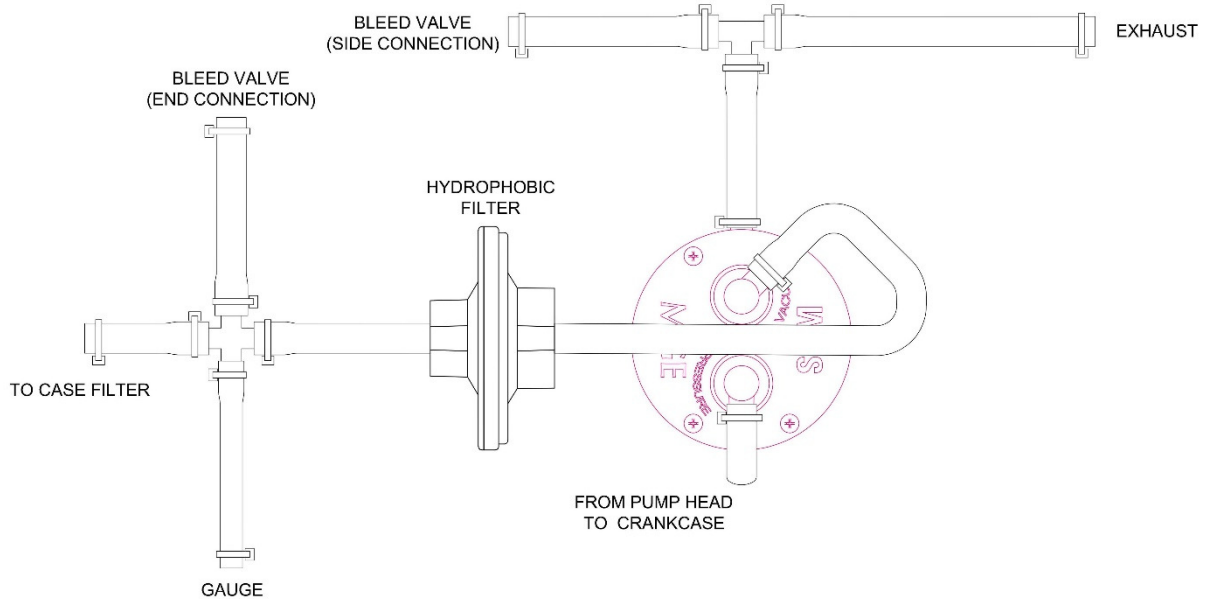
4.6 Replacing the Internal Hydrophobic Filter and Tubing



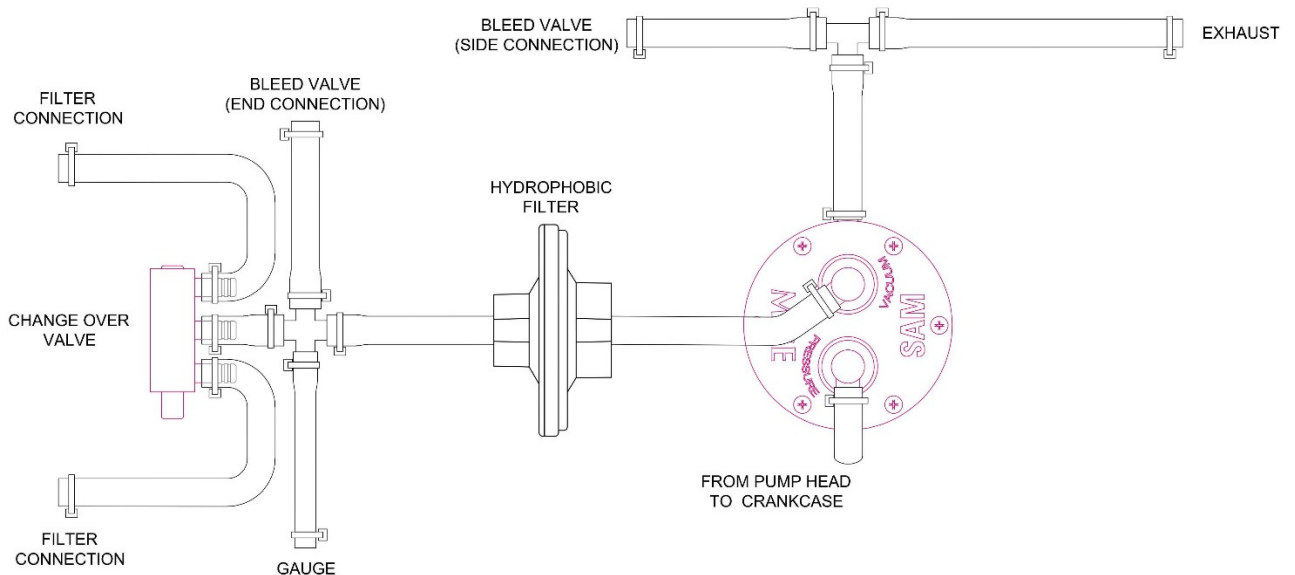
Warning! A hydrophobic filter must be fitted internally to prevent liquid passing through to the pump. Hydrophobic filters only work once and should be replaced immediately it becomes wetted.

When replacing filters, particularly the hydrophobic filter, it is important to ensure the filter is connected correctly to suit the direction of flow. The filters will only operate efficiently in one direction. Small inlet tis on the gauge side, Large inlet to the pump side. The See diagram below.

When replacing the internal tubing use equivalent tubing. Tubing to gauge $\varnothing 5\text{mm}$ I/D, wall thickness min 2mm, all other tubing on the **SAM** unit $\varnothing 6\text{mm}$ I/D, wall thickness min 3mm.



SAM 12 and SAM 15



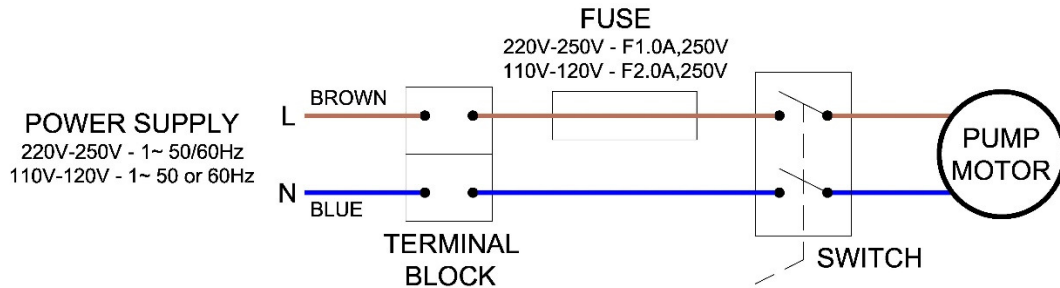
SAM 14 and SAM 16

4.7 Replacing the Main Cable



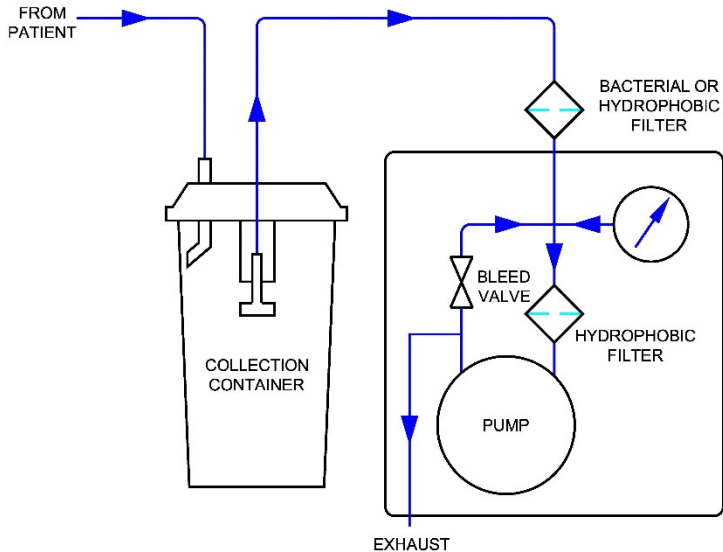
Warning! Always electrically isolate the **SAM** unit from the mains power supply before carrying out any cleaning, maintenance or repairs. Electrical isolation of the **SAM** unit is by removal of the mains power cable from the mains power supply.

- Isolate the **SAM** unit from the mains power supply!
- Detach the back panel to access the internal terminal block.

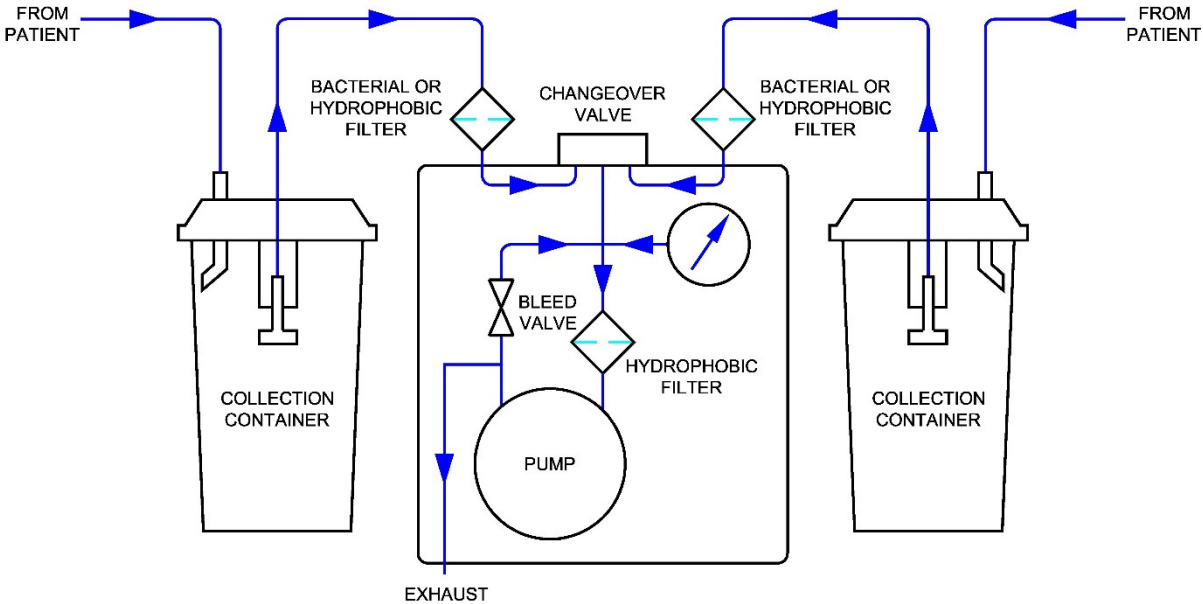


- Disconnect the brown and blue conductors of the cable from the terminal block, and withdraw the cable.
- Fit the replacement cable through the access hole.
- Connect the conductors to their respective terminals (Blue to Blue and Brown to Brown) in the terminal block. Provide sufficient length of cable between the gland and terminal block.
- Fit the cable into the labyrinth.
- Ensure all conductors are fitted as the original.
- Check continuity of each circuit.
- If reconnection is correct - replace the back panel.

4.8 Flow Diagram



SAM 12 and SAM 15



SAM 14 and SAM 16

5. OPTIONS AND RECOMMENDED SPARES

5.1 Options

User Instruction Manuals are offered in English. Other languages are available on request.

	Model	Electrical Specification		Collection Jars		Power Cable		Version	
	SAM	12	01	230Vac 50/60Hz	00	No Jar	01	UK	01
14		02	110Vac 50/60Hz	01	SAM 2 (2Ltr)	02	German	02	Mobile
15		03	4M Electric Cable	03	Abbott	03	French		
16				04	Pennine	04	Spanish		
				05	SAM 4 (4Ltr)	05	European		
				06	VacSax	06	Aus/NZ		
				07	Serres				
				08	Cardinal Medline				
		09	Cardinal CRD						
		10	SAM 2 Holder						
		11	MTP						
		13	Flowmeter Flovac						

Example: SAM 12 / 01 01 01 01

5.2 Recommended spares

Only original and approved spare parts must be used with all **SAM** suction units – failure to use original spares will invalidate the warranty and may cause injury and/or damage to unit.

All spares can be purchased by the user from MG Electric directly. Not all available spares are listed below. Please contact the MG Electric sales team for a full list. (sales@mgelectric.co.uk)

It is recommended that only competent persons should undertake the replacement of spare parts.

5.2.1 Collection Container Components

2 litre Intra-Uterine collection container	SAM 2 IU
Disposable bacterial filters – 24pk	MSP1002
SAM 2 Bottle top assembly	MSP1047
SAM 2 overflow valve – 10pk	MSP1048
SAM 2 IU bottle top assembly	MSP1071
Silicone tube (OD Ø12mm) – 25M	MSP1156
SAM patient tubing – 2M	MSP1351
Abbott collection container conversion kit	MSP1146

5.2.2 Unit Components

Disposable hydrophobic filters – 24pk	MSP1003
Elbow connector and 'o rings – 10pk	MSP1004
Exhaust filter – 10pk	MSP1015
Filter capsule mounts with 'o' rings and fixings – 10pk	MSP1017
Handle with fixings	MSP1027
2amp 20mm fuses – 10pk	MSP1225
Power cable – 2M	MSP1377

5.2.3 MG30 Pump Components

MG30 Pump (Pump & motor 230V 50/60Hz)	MSP1613
MG30 Motor 230V 50/60Hz	MSP1614
MG30 Pump head connector set	MSP1615
MG30 Pump head service kit	MSP1616
MG30 Consumable spares service kit	MSP1617
MG30 replacement for LQ25 (One Jar Option)	MSP1618
MG30 replacement for LQ25 (Two Jar Option)	MSP1619
MG30 Con rod/diaphragm assembly	MSP1620


5.2.4 Accessories

Mobile conversion kit	MSP1147
Foot-switch conversion kit	MSP1152
Bedside kit	MSP1153

6. TECHNICAL SPECIFICATION

6.1 General Dimensions



Free air-flow (litres/minute):	30 lt/min nominal*	
Vacuum:	650mmHg*	
Performance classification:	High vacuum High flow (ISO 10079-1)	
Nominal collection container capacity:	2 Litres**	4 Litres‡
Power input (watts):	90W	
Standard supply voltages available:	220V-250V 50/60 Hz 1ph	110V-120V 50/60 Hz 1ph
Capacitor:	220V-250V 4uF	110V-120V 12uF
Fuse type: 5 x 20mm	220V-250V: F1.0A, 250V	110V-120V F 2.0A, 250V
Electrical protection:	 Type B, Applied part to EN60601-1 <input type="checkbox"/> Class II double insulated (No Earth) to EN60601-1	
Electric motor classification:	BS2757 Class B (insulated). Auto reset thermal cut out	
Basic Weight:	8.7Kg**	9.3kg‡
Maximum allowable weight:	13kg all units.	
Noise level:	50 dB (a)	

*Vacuum measurements are quoted at sea level, and flow rates are taken at the filter point.

** SAM 12 and SAM 15 Options

‡ SAM 14 and SAM 16 Options

6.2 End of life



IMPORTANT INFORMATION

Correct disposal of the product in accordance with EC directive 2012/19/EU

At the end of its life, the product must not be disposed of as urban waste.
It must be taken to a special local authority differentiated waste collection centre or to a dealer providing this service.

6.3 Electromagnetic Compatibility (EMC)

Special Instructions / Notes regarding the **SAM** unit and Electromagnetic compatibility (EMC) testing to EN60601-1-2: 2014

The **SAM** unit has been tested regarding its ability to operate in an environment containing other electrical/electronic equipment (including other medical devices).

The purpose of this testing is to ensure the **SAM** unit is not likely to adversely affect the normal operation of other such equipment and that other such equipment is not likely to adversely affect the normal operation of the **SAM** unit.

Despite the testing of the **SAM** unit that has been undertaken, normal operation of the **SAM** unit can be affected by other electrical/electronic equipment and portable and mobile RF communications equipment.

As the **SAM** unit is medical equipment, special precautions are needed regarding EMC (electromagnetic compatibility).

It is important that the **SAM** unit is configured and installed/put into service, in accordance with the instructions/guidance provided herein and is used only in the configuration as supplied.

If the **SAM** unit is used with cables / accessories other than those supplied, this may result in increased emissions or decreased immunity of the **SAM** unit in relation to EMC performance.

It should be noted that cables / accessories provided with the **SAM** unit should not be used on other equipment. To do so may result in increased emissions or decreased immunity of the other equipment in relation to EMC performance.

The **SAM** unit should not be used adjacent to or stacked with other equipment. If adjacent or stacked use with other equipment is necessary, the **SAM** unit and the other equipment should be observed/monitored, to verify normal operation in the configuration in which it will be used.

For the purposes of EN60601-1-2, the **SAM** unit has no essential performance.

The user should be aware that if the **SAM** unit is subject to electromagnetic interference in the form of electrical fast transients/bursts (IEC61000-4-4), electrostatic discharges (IEC61000-4-2) or conducted / radiated RF interference (IEC 61000-4-6 / IEC61000-4-3), incorrect operation of the **SAM** unit may occur. This could cause the vacuum to stop

7. NOTES

8. OTHER PRODUCTS IN THE SAM RANGE

Mains Powered Suction

SAM 17T - Thoracic Theatre suction unit
SAM 17W - Thoracic Ward suction unit
SAM 18 - Intensive care low vacuum suction unit
SAM 19 - Twin jar Intensive care low vacuum suction unit
SAM 35 - Major operating theatre high vacuum suction unit
SAM 36 - Twin jar intra-uterine aspirator unit
SAM MS – Micro suction unit

Portable Suction

SAM HOSPY - General high vacuum suction unit
SAM EPS - Battery powered portable suction unit (Neonatal Option available)
SAM MANUVAC - Portable foot operated suction unit
SAM TVAC - Disposable, hand operated suction unit

Oxygen Flowmeters

SAM OXYFLOW - Oxygen flowmeter
SAM OXYHUM - Oxygen humidifier

Pipeline Regulators

SAM 50 - High vacuum pipeline regulator with remote probe
SAM 51 - High vacuum pipeline regulator with direct probe
SAM 52 - Low vacuum pipeline regulator with remote probe
SAM 53 - Low vacuum pipeline regulator with direct probe
SAM 54 - High vacuum pipeline regulator - remote probe & mobile trolley

Research and Development

Since 1954, when MGE produced their first surgical suction units, the **SAM** range has become accepted as the industry standard, both in the U.K. and throughout the world. In recent years, the **SAM** range has been greatly extended, with models now available for portable, electrical suction and central suction requirements. They have been completely re-designed, using lightweight, robust materials, achieving greater efficiency, and making them easier to clean and operate. All MGE equipment is manufactured and assembled to very high standards of quality at the modern factory in Colchester in accordance with BS EN ISO 9001 Quality Management System, BS EN ISO 13485 and the Medical Device Directive 93/42/EEC.

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