

Safe Aspiration System – SAM12



The SAM 12 combines high vacuum and high flow performance, making it the preferred choice in general ward, accident and emergency and minor operating theatres. Its reputation for reliability and ease of operation has established the SAM 12 among the most widely used suction units in the world today.

Vacuum = 635mmHg. Flowrate = 25Ltrs/min

MGE

COMMITMENT

TO RESEARCH & 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 9001:1994 Quality Management System, and TUV/GS Nordic Standard approval.

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MGE
Worldwide

THE

SAM

12

FROM MGE WORLDWIDE



USER MANUAL

**OPERATING AND MAINTENANCE
INSTRUCTIONS**

MGE
Worldwide

THANK YOU

Dear Customer,

May we take this opportunity to thank you for purchasing a SAM 12 Medical Suction Unit.

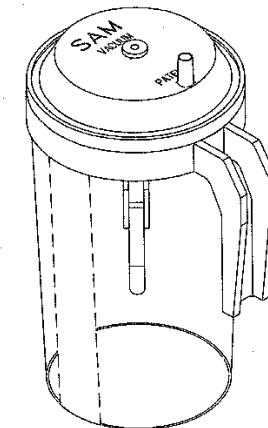
Please read the operating instructions and listed precautions thoroughly before attempting to operate the unit.

MG Electric manufactures its range in accordance with the requirements of BS EN ISO 9001.

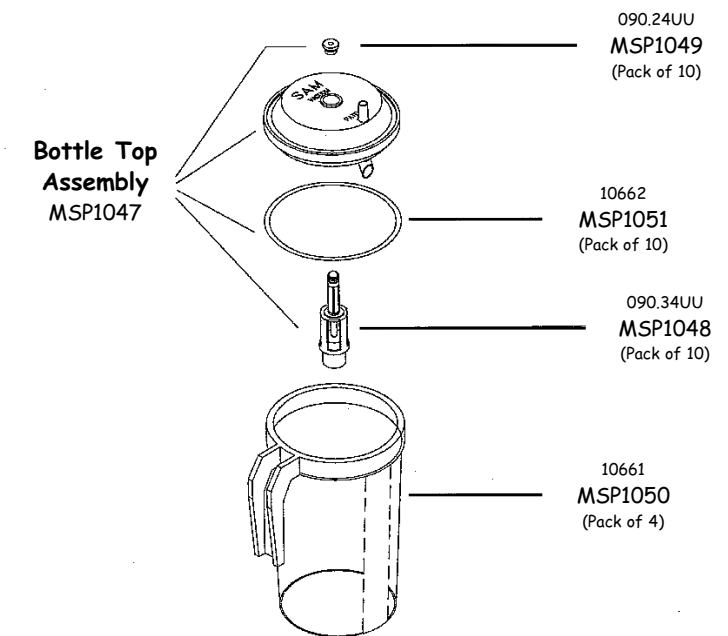


Return of Medical Equipment
Should you wish to return any equipment to MG Electric (Colchester) Limited, or one of our designated distributors, Health Service Guideline HSG (93) 26 Decontamination of equipment prior to inspection, service or repair) must be adhered to. Failure to follow this guideline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

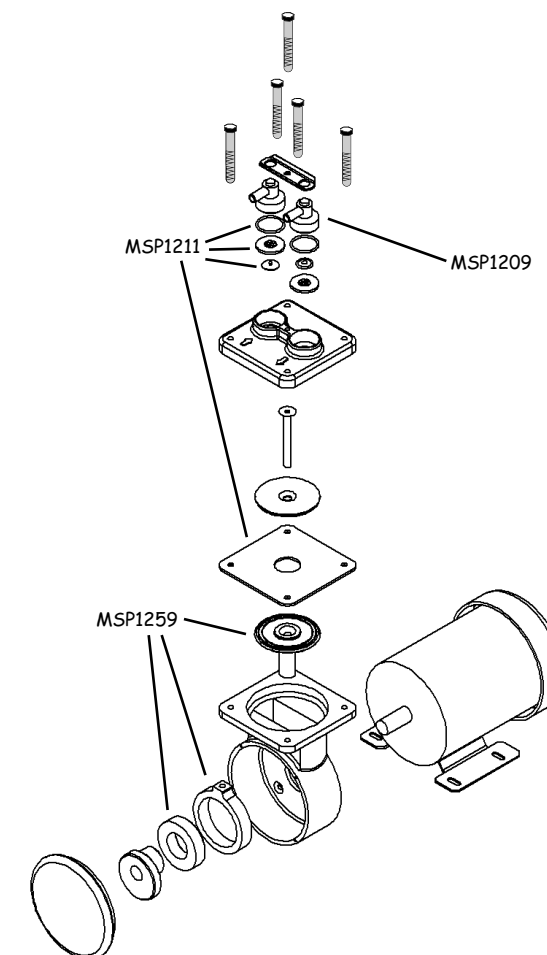
SAM 2 BOTTLE



**Bottle Complete
SAM 2**



PUMP

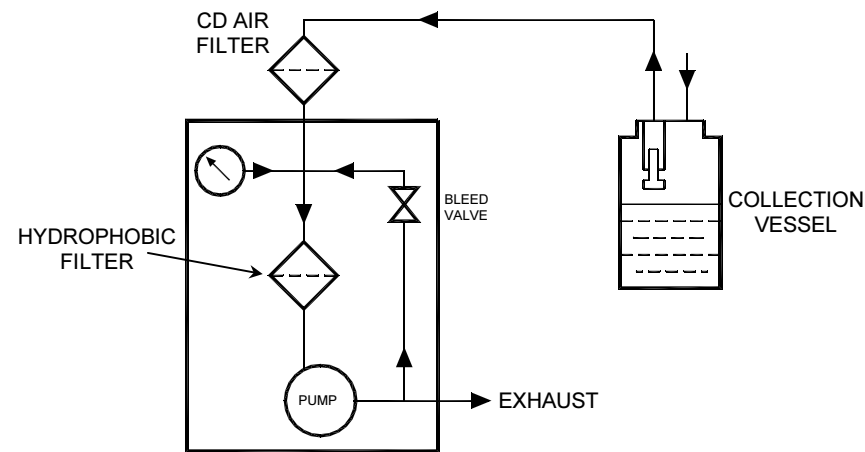


**MQ25 Pump Complete
230V 50/60Hz
MSP1207**

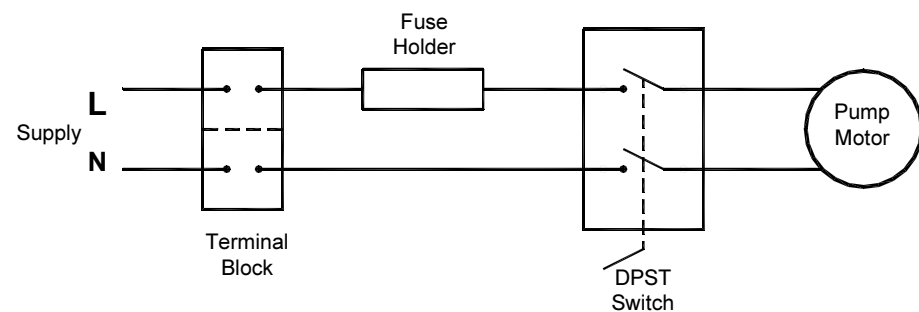
TECHNICAL SPECIFICATIONS

Free air flow (litres/minute):	22	
Vacuum:	600mmHg	
Performance classification:	High vacuum High flow	
(ISO 10079-1)		
Nominal collection container capacity:	2 Litres	
Power input (watts):	90	
Standard supply voltages available:	220-250v 50/60 Hz 1ph	110-120V 50/60 Hz 1ph
Capacitor:	220-250v 4uF	110-120V 12uF
Fuse type:	220-250v: (F) 1.0A	110-120V (F) 2.0A
Electrical protection:	Type B, Applied part to EN60601-1 Class II double insulated (No Earth required) to EN60601-1	
Electric motor classification:	BS2757 Class B (insulated). Auto reset thermal cut out	

BASIC FLOW DIAGRAM



CIRCUIT DIAGRAM



CONTENTS

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3	Maintenance	- Daily - Monthly - Three Monthly
4	Options & Recommended Spares	
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6	Technical Specifications	- Wiring Layout - Circuit Diagram
7	SAM 2 Bottle - Diagram	
	Pump - Diagram	

Notes

Other Products in the SAM range

GENERAL DESCRIPTION

THE SAM 12 is a general purpose medical suction unit with a single collection container designed for all medical procedures which require an adjustable high vacuum.

It is designed either for domiciliary use within a healthcare facility. *It is not intended for field and transport use.*



WARNING

The SAM 12 must never be operated in the presence of flammable gas, or without a suitable bacterial filter.

Isolate mains supply before removal of cover!

MAINTENANCE

Spares cont-

MSP1146	SAM 12/14/18 Abbott conversion kit	10438 10440 10441 10442 11085 7794	Abbott adaptor plate SAM 12/14/15/18 Abbott cradle Abbott canister Abbott liner (blue) Set up instruction sheet M5 screw
MSP1147	SAM 12/14/18 mobile conversion kit	080.29UU 10948 5985 10890 10894 10895 11146	Plastic spacer No. 8 screw M6 nylon screw Washer 8mm Grey wheel SAM unit axle Mobile instruction leaflet
MSP1150	SAM 12/14/18 glass to SAM 2conversion kit	SAM 2 10531 10688 11045 210.87UU 450.96UU 7370 8916	2 litre collection container complete Yellow elbow connector Bottle bracket clip PVC tube 8mm ID Screw M5 Elbow O ring 5mm dome nut Instruction sheet
MSP1152	SAM 2/14/18 foot-switch	8033	Foot-switch assembly
MSP1153	SAM 12/18 bedside kit	1103	Bedside stand SAM 12/15/18
MSP1155	Patient multi-fit bubble tubing 30m	090.33UU	Patient bubble tubing
MSP1156	Clear PVC tube/bottle-to filter 30m	11045	PVC tube 8mm ID
MSP1207	MQ25 Pump Complete		Pump & motor 230V 50/60Hz
MSP1208	Motor Motor 230V 50/60Hz		Motor 230V 50/60Hz
MSP1209	MQ25 Pump head connector set		Pump head connectors
MSP1259	Con rod/diaphragm assembly MQ25 Pump		Con rod Diaphragm Assembly Bearing Screw M6 x 60 Eccentric Screw M5 x 12
MSP1211	Pump head service kit MQ25/45		Valve Assembly x 2 Diaphragm x 1 Pump head O-rings x 2
MSP1212	Consumable spares service kit MQ25/45 pump		Diaphragm Pump head O-rings x 2 Valve Assembly x 2 Disposable filter capsule Filter mount O-rings Vacuum Connector O-rings Exhaust filter Bottle top grommet Bottle top O-ring Overflow valve assembly
MSP1217	SAM 12 internal tubing assembly		Neo tube x 200mm Bleed valve/exhaust tube assembly Bleed valve tube assembly 10 Cable ties

Note: To replace an existing LQ25 Pump with an MQ25 requires the following complete kit:

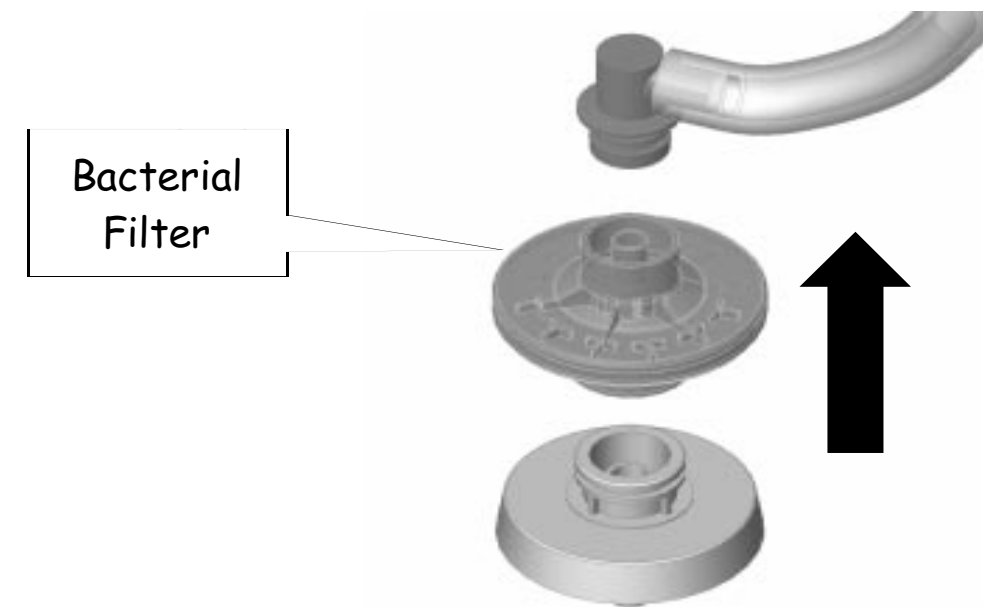
MSP1235	MQ25 replacement kit for LQ25	MQ25	Mounting bracket Nut M5 x 4 Washer M5 x 4 Washer plain M5 x 4 Tubing assembly
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Spares All spares detailed in this section can be purchased by the user. It is recommended that only competent persons should undertake the replacement of spare parts.

IMPORTANT: Other than routine daily procedures, maintenance or repairs to MG Electric products should be carried out by a fully qualified engineer or an authorised MG Electric dealer.

Daily Procedures

- ❶ An anti-foam agent may be put into the fluid collection container, without disinfectant solution, before use to prevent the possibility of frothing. It should not however, be placed into the container for extended storage periods.
- ❷ In accordance with ISO 10079-1 it is recommended that the Contamination Defence (CD) filter capsule be changed after each day's use, or immediately if it becomes wetted by froth, or after aspiration of any infective material.
- ❸ Examine the collection container for damage. Replace if necessary.
- ❹ Examine the external tubing for ageing, damage or contamination. Replace if necessary using equivalent tubing.



Monthly Maintenance

1. Check the vacuum and the flow at the collection container top.
- Procedure -
- 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 on the collection container top and note the time taken for the gauge to indicate an increase of 450mm of Hg. This time should not exceed ten seconds. The gauge should continue to rise to indicate the maximum vacuum available. This should not be less than 590mm Hg.
2. Replace the exhaust filters located in the exhaust outlet moulding located on the side of the casing and marked 'Exhaust Outlet'.
 3. Carry out the daily maintenance procedure.

Three Monthly Maintenance

- The SAM 12 unit should be withdrawn from service if maintenance is required. Before any work is carried out disconnect the electrical supply from the unit.
- Remove the pump from the outer case. Remove the pump head from the pump casing and examine the diaphragm for signs of wear. Check the ballrace within the connecting rod for excessive movement. Replace the connecting rod and ballrace 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.
- Check the internal and external tubing for ageing or wear. Replace with equivalent tubing where necessary.
- Replace the hydrophobic filter.
- Check the internal wiring for ageing or wear. Replace with equivalent material and terminations where necessary.
- Return the pump unit to the outer case and re-connect the internal tubing.
Do not overtighten the rear cover fixings. (Recommended torque 20 cNm).
- Examine the mains cable for wear or damage. Replace if necessary using equivalent cable.
- Examine the collection container for damage. Replace if necessary.
- Examine the overflow valve float mechanism to ensure that this has free movement.
- Check the vacuum and flow performance at the collection container as previously described in monthly maintenance.

Testing - 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.

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.



THE SAM 12 is a high vacuum suction unit, incorporating one collection vessel and offering mobile or static models, as well as various voltage options available on request. User Instruction Manuals are offered in English. Other languages are available on request.

U N I T S

ORDER REF.	VOLTAGE	COLLECTION VESSEL	LANGUAGE	MODEL
SAM12/01010101	220/240V, 50/60Hz	Polycarbonate	English	Static
SAM12/01010102	220/240V, 50/60Hz	Polycarbonate	English	Mobile
SAM12/01030101	220/240V, 50/60Hz	Abbott	English	Static
SAM12/01030102	220/240V, 50/60Hz	Abbott	English	Mobile
SAM 12/01010501	220/240V, 50/60Hz	Polycarbonate	European	Static
SAM 12/01010502	220/240V, 50/60Hz	Polycarbonate	European	Mobile
SAM 12/01030501	220/240V, 50/60Hz	Abbott	European	Static
SAM 12/01030502	220/240V, 50/60Hz	Abbott	European	Mobile

S P A R E S

ORDER REF.	PACK DESCRIPTION	COMPONENTS	COMPONENT DESCRIPTION
SAM 2	2 litre collection container	SAM 2	Complete bottle assembly
MSP1001	0-760mmHg vacuum gauge	040.08UU	0-760mmHg vacuum gauge
MSP1002	24 disposable bacterial filters	060.33UU	24 disposable bacterial filters
MSP1003	24 disposable hydrophobic filters	8176	24 disposable hydrophobic filters
MSP1004	Pack of 10 yellow vacuum connectors	10531	Yellow elbow connector
		450.96UU	Elbow connector O ring
MSP1005	Vacuum control assembly	10981	Vacuum control assembly
MSP1007	Green on/off switch	7430	On/off switch
MSP1015	Pack of 10 exhaust filters	020.22UU	Exhaust filter
MSP1017	Pack of 10 yellow filter capsule mounts	10532	Yellow filter capsule mount
		450.97UU	Filter mount O ring
		210.63UU	M4 washer
		210.77UU	M3.5 fixing screw
MSP1021	20 filter O rings	450.96UU	10 elbow O rings
		450.97UU	10 mount O rings
MSP1025	10 fuse holders	020.41UU	Fuse holder
MSP1027	Handle assembly	10258	Screw
		10843	Handle
		2361	Washer
MSP1045	Pack 4 anti vibration mounts MQ25	10458	A/V mount
		10459	M4 x 5 screw
		210.61UU	M4 nut
		210.63UU	M4 shake washer
MSP1047	Bottle top assembly	10970	Bottle top complete
MSP1048	Pack of 10 overflow valve	090.34UU	Overflow valve
MSP1049	Pack of 10 bottle top grommet	090.24UU	Bottle top grommet
MSP1050	Pack of 4 SAM 2 bottle	10861	SAM 2 bottle
MSP1051	Pack 10 SAM 2 bottle top O ring	10662	SAM 2 bottle top O ring
MSP1053	Pack of 10 rubber feet	040.01UU	Rubber feet
		10682	Fixing screws
MSP1054	Pack of 10 bottle bracket clip	10688	Bottle bracket clip
		7370	Dome nut
		210.87UU	M5 fixing screw
MSP1055	Pack of 10 cable cleat	10668	Cable cleat
		10743	Starlock washer
MSP1056	Pack of 10 exhaust assembly	10153	Exhaust assembly
MSP1057	SAM 12 plastic label set	10671	SAM fascia panel
		10723	SAM 12 ID label
MSP1058	SAM12/18 case (top cover)	10766	SAM 12/18 case (top)
MSP1059	SAM plastic case nylon screw set	10874	6 nylon screw M6 x 6
		5985	2 nylon screw M6 x 40
MSP1060	Pack of 100 M5 washer	210.17UU	M5 washer
MSP1061	Pack of 100 M4 shake washer	210.63UU	M4 shake washer
MSP1062	Pack of 100 M5 nut	210.79UU	M5 nut
MSP1064	SAM 12/14 plastic case (base)	10771	SAM 12/14 plastic case (base)
MSP1065	100 M5 nut	210.61UU	M4 nut
MSP1066	SAM 12/14 plastic case (back)	10768	SAM 12/14 plastic case (back)
MSP1225	10 x 2amp 20mm fuses	11159	2 amp fuse x 20mm
MSP1068	SAM 12 manual (GB)	10730	SAM 12 manual
MSP1144	Filter modification kit	040.54UU	4 way connector
		060.14UU	Change label
		060.31UU	Disposable bacterial filter
		10531	Yellow vacuum connector
		10532	Yellow filter capsule mount
		210.63UU	M4 washer
		210.77UU	M3.5 screw
		450.96UU	Elbow O ring
		450.97UU	Mount O ring