MAY,1988

CLEMENTS

HOSPITAL HIGH SUCTION UNIT

SUC84100

OPERATION & MAINTENANCE MANUAL

FROM SERIAL NO. SUC84100 0588 2049

Part No. SUC91005403

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Specifications

Power Source	-	220 - 240v 50Hz
Switch	-	Neon rocker switch
Suction	-	720mmHg (98-kPa) at sea level
Flowrate	-	0-35 litres of free air per minute
Filter (Exhaust)	-	Cotton wool - 10gms (Bleached hospital cotton wool)
Pump Type	-	Rotary type, oil sealed with positively driven vanes. Stabilised cast iron rotor. Heat treated wear resistant aluminium pump body.
Body Housing	-	H.D. Polyethylene, rotary cast
Motor	-	4 Pole 1450rpm 220/240volts. 50Hz, 1.6amps with auto-reset thermal overload. Totally enclosed with sealed ball bearings.
Collection Jar	-	High temperature polycarbonate jar with non-static polypropelene bung
Regulator	-	Spring & ball by-pass type
Gauge	-	Bourden tube 0-760mmHg = 0 to -100kPa
Operating	-	Continuous up to ambient of 35°C
Standard	-	To BS4199 Pt.1. Sparkless enclosure
Markings & Calibrations	-	To conform with international standards, all gauges are dual scale reading in both -kPa and mmHg.

Accessories / Spares

SUC80301	2 Litre Suction Jar
SUC80321	Bung Assembly
SUC81005	Float & Cage Assembly
SUC81006	Filter Seals
SUC80297	Suction Tubing
SUC80490	Plain Metal Handpiece
SUC80350	Fingervalve Handpiece
SUC80101	VP10 Oil - 20 litres
SUC80102	VP10 Oil - 4.5 litres
SUC80103	VP10 Oil - 500 mls
MUL94003654	Switch
SUC84100012	Gauge Assy - High Suction
SUC84100018	Supply Cable - Mains to Switch
SUC84100021	Rear Compartment Cover
SUC84100023	Pump Body Assembly
SUC84100028	Power Lead - Motor to Switch
SUC84100039	Instruction Plate
SUC84100045	Oil Tank Cover Assembly
SUC84100049	Filter Assembly
SUC84100055	Motor Assembly
MUL91000711	Drain Cock
SUC84100050	Regulator Body Assembly
SUC84100034	Regulator Screw Assembly
SUC83100112	Oil Filler Plug
SUC81500008	Overload Switch
SUC81500012	Bearing O.D.E.
SUC81500013	Bearing D.E.

Accessories / Spares (Continued)

SUC81500022	Oil Seal
SUC81500023	Inner Wear Plate
MUL81500033	'O' Ring - Pump body
MUL81500034	'O' Ring - Oil Tank Cover
SUC81500036	Foot - Motor Feet
SUC81500054	Circlip - D.E. Seal
MUL81500058	'O' Ring - Regulator
SUC81500079	Oil Observation Glass Kit
SUC81500103	Gauge Cover Disc. (Ametek)
SUC81500118	'O' Ring Set - Pump
SUC81500137	Ported Cover Plate
SUC83100025	Key - Woodruff
SUC83100026	Pump Rotor
SUC83100035	Tube Nozzle
SUC83100039	Cotton Wool - Filter
MUL83100067	Tank Securing Screws
MUL83100068	Pump Securing Screws
MUL9400372	Fuse 5.0amp Slow Blow
SUC83100093	Vane Package Set
SUC83100095	Vane Locating Ring
MUL96241065	'O' Ring - Oil Filler Plug

Installation & Operation

The Clements Hospital High Suction Unit SUC84100 comes complete with:-

a) 2 x SUC80404 Disposable Handpieces

b) 1 x 500ml bottle of VP10 Oil

c) 2 x 2 metre lengths of Suction Tubing connected to each bung and one 400mm length for connecting the collection jars in series.

This particular pump is the top of the range of Clements High Suction pumps. It's main feature is that we utilise the extremely reliable and long proven, rotary vane pump for it's suction source. This gives the operator the flexibility of suction strengths from 0 to 720mmHg with flowrate capability of up to 35 ltrs/min. This makes the unit ideal for any procedure in hospitals requiring suction.

Being mobile, it can easily be moved to any part of the hospital, with storage at rear, to place additional tubing, handpieces, etc.

This unit can be run for lengthy periods without being detrimentral to the pump and motor, although Clements do recommend periodic maintenance. The flameproof version of this pump is suitable for use in minor operating theatres.

How to Operate

1. When you first receive your unit, the pump will need filling with oil. Refer to Routine Mainenance section of this manual.

2. Prior to using the pump, always check the bung and tubing. Be sure they fit correctly to avoid leaks.

3. Connect unit to 220/240volt 50 Hz AC power supply. Press rocker switch to the "ON" position (the neon switch will illuminate), and select suction strength accordingly.

   To select suction strength quickly, place finger over the end of the tubing and watch the gauge. Adjust the suction regulator accordingly.

4. Although the collection jars are fitted with an overflow protection device, keep fluid levels to a minimum to prevent any possible spillover into pump unit.

5. DO NOT turn pump off with suction handpiece occluded.

Routine Maintenance

Every 100 hours of operation or every two months, or after infectious patients, or when oil looks contaminated:-

1. To fill or replenish with oil:

   a) Release toggle latches on the rear of the unit

   b) Push the housing forward

   c) Remove oil filler plug

   d) Fill with oil to level marked on front of pump

   e) Replace oil filler plug

   f) Close housing and secure toggle latches

2. Change exhaust filter by unscrewing filter caps, emptying filter and repacking with bleached cotton wool (10 gms weight).

3. Check tubing and replace if perished, soft or discoloured.

4. Check the seal between the collection jar and bung.

5. Check float valve seal and replace if necessary.

6. Check inlet nipple sealing surface and replace if damaged.

7. Generally clean pump unit. Use a damp soapy disinfected cloth and wipe over. NEVER use an abrasive cleaning agent, as this will scratch the plastic.

Fault Finding

1. No Suction - motor apparently working

   Check: Tubing blocked
   Float valve in 'OFF' position
   Inlet blocked
   Gauge blocked - dismantle & check
   Regulator blocked - dismantle
   Bung and collection jar not sealing
   Regulator set at zero - adjust

2. No Suction - motor not running though electricity available and no humming is heard from machine

   Check: Mains fuse
   Faulty electrical lead
   Pump fuse
   Unit switched on
   Thermal overload - dismantle motor
   Faulty power outlet

3. No Suction - motor not running though humming is heard from motor when pump is switched on.

   Check: Blocked pump - dismantle pump and clean out
   Motor switch gear - dismantle motor
   Motor starting winding - dismantle motor

4. No Suction - intermittent hum from motor

   Check: Partially blocked - dismantle pump and clean out

5. Suction - but intermittent running of motor
   (Refer to heading under HIGH SURFACE TEMPERATURE first)

   Check: Thermal overload - dismantle motor
   If thermal overload okay, check running winding

6. Dirty oil and apparent oil leaks

   Change filter
   Change oil
   Dismantle pump (foreign matter)
   Replace 'O' Rings and/or oil seal
   Oil may darken during the first 50 hours of operation as the pump 'runs in'.

Fault Finding - (Continued)

7. Will not give enough suction

Check: Regulator turned fully clockwise
Suspect leaks in bung, tubing or collection jar, or reduced air volume through partial blockage in tubing.

A worn pump gives increased noise and oil consumption but suction is not materially affected unless wear is very great.

8. Excessive Oil Consumption

ie. reduced oil level, emitting oil fumes, continually soiled filter, etc.

If consumption is over 2 grams/hour suspect worn pump or faulty oil seal.

Check: Oil seal (replace)
Inner and outer cover plates (skim and replace)
Pump body for scoring (replace body and vanes)

9. Noisy at any load

Check: Worn pump
Debris in pump rotor
Incorrectly fitted parts

10. Noisier with increased load

Bearings, possibly in combination with (7)

DO NOT confuse with hydraulic knock discernable at about 700mmHg.

11. High Surface Temperature

High surface temperature is normal and is designed to assist in bacterial decontamination. Surface parts are designed to operate in surface temperature to 85°C (as in British Standards).

The apparatus is protected by thermal overload.

In very high ambient conditions should the thermal overload keep on tripping out ensure that suction is being backed off to about 400mmHg.

Technical Maintenance

Dismantling and Rectification

Most faults are of mechanical origin in the pump unit, rather than of electrical origin in the motor. It is rarely necessary to dismantle the electrical motor.

NOTE:

Pumps which require replacement wearing parts such as vanes, rotor, etc, will frequently require careful assembly to 'bed in' new components with the existing sound but partially worn and grooved ones.

In particular check that the rotor is level with the top of the pump body. If oversize then rub down carefully on a flat surface with coarse emery paper. The pump vanes should be a smooth sliding fit and to achieve this it may be necessary to 'relieve' the slots of the rotor with a 'ward' file or slightly smooth the edges of the vanes.

1.a) Dismantling the Pump

Tools required:
1 large screwdriver (oil tank cover)
1 medium screwdriver (other screws)
1 plastic mallet

1. Remove collection jars and tubing
2. Release toggle latches, push housing forward
3. Open drain cock & drain oil, close drain cock
4. Unscrew the two oil tank securing screws
5. Remove oil tank cover - a tap with the back of the hand or with mallet will assist
6. Unscrew the five ported cover plate screws and remove cover plate
7. Remove pump body complete. Pullers may be necessary
8. Remove control rings and vanes
9. Remove pump rotor. Pullers may be necessary if pump is corroded
10. Remove inner control ring
11. Remove inner wear plate

If the inner wear plate is worn it may be refaced on a lathe or turned over

Technical Maintenance - (Continued)

If Oil Seal Needs Replacing or Examination

1.b) Dismantle the motor

1. Unscrew four motor stud bolts
2. Remove motor drive endshield
3. Remove oil seal from seal housing
4. Fit new seal
5. Replace drive endshield in correct position
6. Replace and secure motor studs

1.c) Re-assembling the Pump

We recommend replacing all 'O' Rings whenever the pump is dismantled. If, however, any are being re-used, examine their condition thoroughly and be careful not to damage them when resetting the joints.

Be sure all surfaces and components are clean.

1. Replace inner wear plate
2. Replace -
   - Pump body
   - Control ring - inner
   - Rotor
   - Vanes (check correct positioning)
   - Control ring - outer - oil rotor and interior of pump ported cover plate
   - 5 x Pump securing screws

   Check: Pump running smoothly

   Retighten: Screws on ported cover plate, evenly

   Check: Pump running again

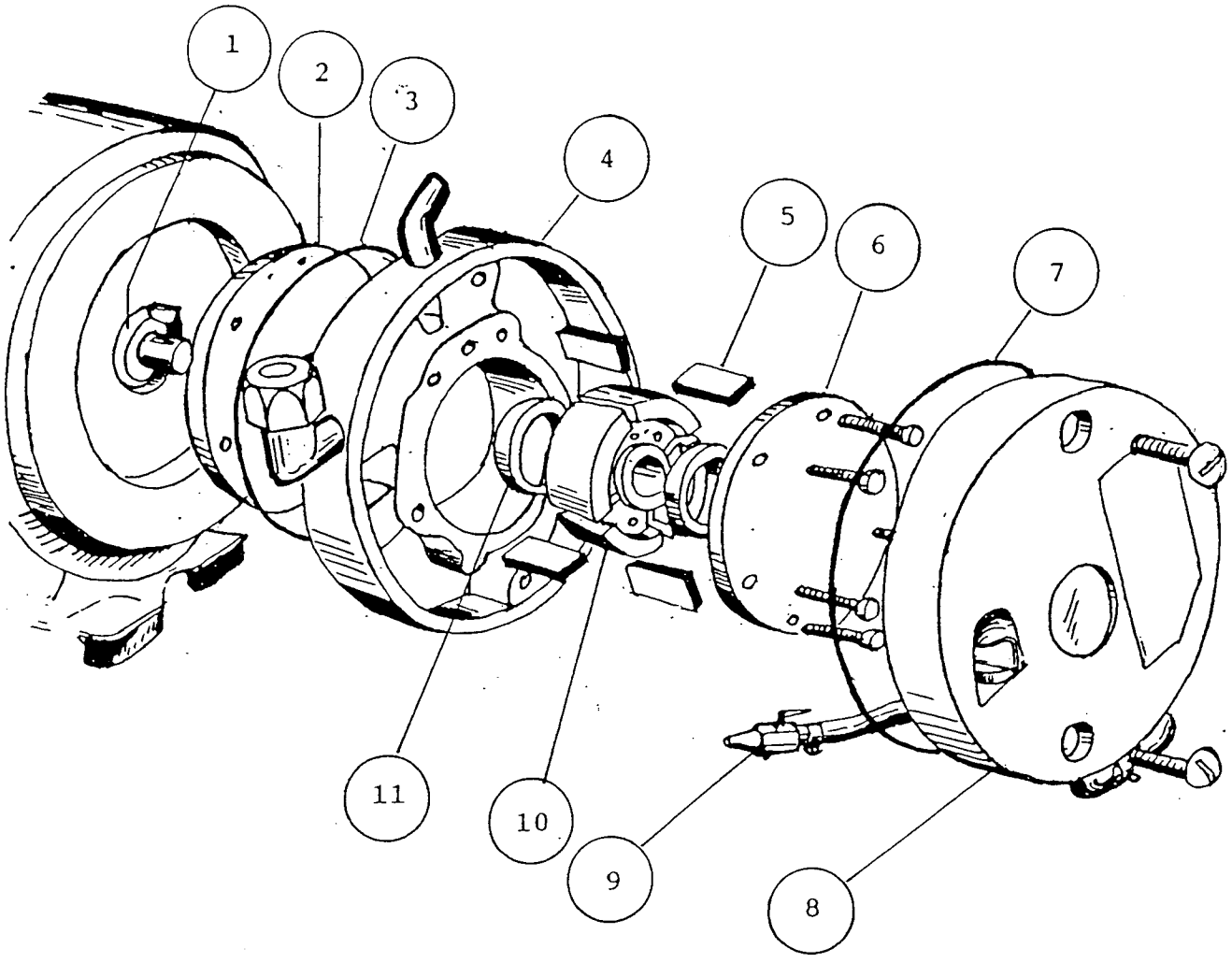
   Reassemble: Oil tank cover and fill with oil

2.a) Dismantling Electric Motor

Tools as pump unit

1. Remove pump unit as in Section 6(a)/Items 1 to 11
2. Mark position of O.D.E. endshield in relation to motor
3. Remove rotor from stator

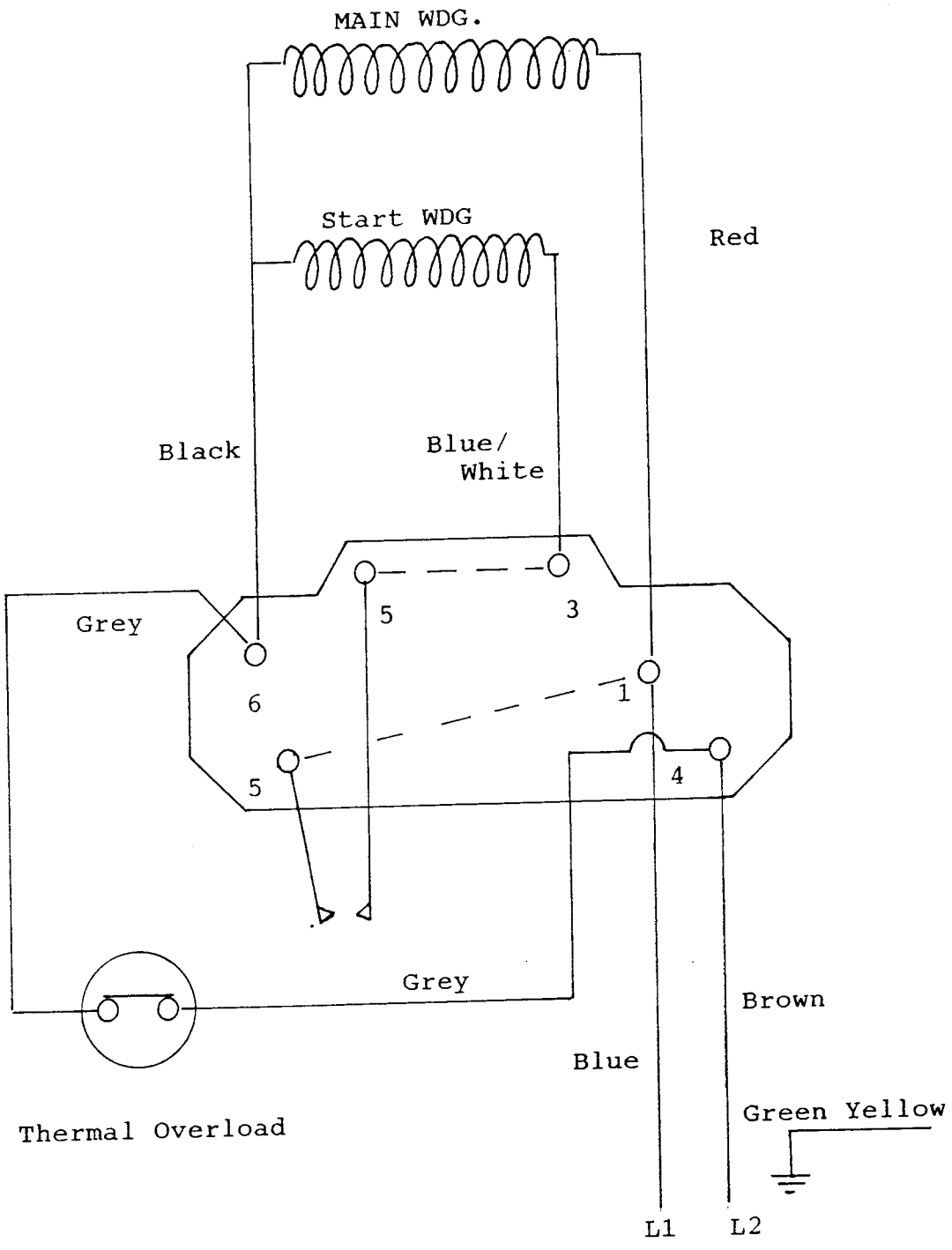
EXPLODED DRAWING OF PUMP ASSEMBLY



1.	SUC81500022	Seal - Oil
2.	SUC81500023	Plate - Inner
3.	MUL81500033	'O' Ring
4.	SUC84100023	Assy. Pump Body
5.	SUC83100027	Vanes
6.	SUC81500137	Plate - Ported Cover
7.	MUL81500034	'O' Ring
8.	SUC84100045	Assy. Oil Tank Cover
9.	MUL91000711	Drain Cock
10.	SUC83100026	Rotor - Pump
11.	SUC83100095	Ring - Control

- SECTION 7 -

SCHEMATIC DIAGRAM OF MOTOR



Cleaning/Sterilisation Procedures

1. Housing

   Clean with a damp soapy disinfected cloth and wipe over. NEVER use an abrasive cleaning agent, as this will scratch the plastic.

2. Suction Tubing

   Autoclave to a maximum of 121°C. Higher temperature my result in the tubing not regaining its original memory.

3. Collection Jars

   Place jar upright or upside down in autoclave (not on it's side) and autoclave to a maximum of 136°C. A hot soapy water solution may also be used.

   NOTE:

   The use of chemical cleaning agents on plastics will eventually reduce the expected performance of that item.

4. Bung

   Disconnect float cage and float from Bung. Place all items in autoclave and sterilise at a maximum of 136°C.

   A hot soapy water solution may also be used.

CLEMENTS STANSEN MEDICAL

WARRANTY AND SERVICE POLICY

I. Clements Stansen Medical warrants, to the original owner/purchaser, the SUC84100 Suction Pump to be free of defects in material and workmanship for a period of twelve (12) months from the date of shipment. This warranty covers all parts and labour charges for the twelve (12) months period. Additionally, should on-site repairs be deemed necessary, Clements Stansen Medical will bear all travel related expenses for a Clements Stansen Medical customer service representative during the first thirty (30) days of the warranty period.

Alternatively, the customer may elect to ship the instrument or component, freight prepaid, to Clements Stansen Medical Service Centre for repairs.

After the initial thirty (30) day period the warranty is factory based (customer pays incoming freight only).

Replacement assemblies can be provided on an exchange basis. Clements Stansen Medical will provide the technical assistance necessary to locate and correct defective assemblies.

II. No other warranty is expressed or implied. The liability of Clements Stansens Medical does not extend to consequential damages.

III. Specific conditions and limitations of this warranty are as follows:

* Any equipment not manufactured by Clements Stansen Medical shall retain its manufacturer's warranty.

* Those items consumed through normal, usage, are not warranted.

* Malfunctions resulting from obvious abuse, negligence, unauthorised modification or from exceeding any instrument specification are not warranted.

IV. Clements Stansen Medical reserves the right to change the design or construction of its products without incurring any obligation to make such changes to units previously shipped.

V. Replacement parts and instrument repairs are warranted for a period of sixty (60) days, and in no way extend the warranty of the instrument beyond its normal twelve (12) month period.

CLEMENTS STANSEN MEDICAL BRANCHES

In communication with Branches, it is essential that both catalogue and serial number of the machine be quoted, as components are continually being improved and changed.

Any problem concerning the servicing of products should be directed to the Service Centre in your state as listed below:-

N.S.W. SERVICE DEPT. "CLEMSERV"	50 JOHN STREET RYDALMERE NSW 2116	PH: (02)638.5577 FAX:(02)684.2440
HEAD OFFICE (MANUFACTURING)	109 WICKS ROAD, NORTH RYDE NSW 2113	PH: (02)888.1555 PH: (02)887.2166 PH: (02)887.3377 FAX:(02)888.6018 TLX:AA24457 CLEMED
N.S.W. SALES CLEMED	28 CORUNNA ROAD, EASTWOOD NSW 2122	PH: (02)858.5800 FAX:(02)804.6885 TLX:AA24457
VICTORIA	69/73 CUBITT STREET RICHMOND VIC 3121	PH: (03)429.3533 FAX:(03)429.3743
QUEENSLAND	59 ROBERTSON STREET FORTITUDE VALLEY QUEENSLAND 4006	PH: (07)2529.855 FAX:(07)2529.139
WESTERN AUSTRALIA	21 ROBERTS STREET OSBORNE PARK WA 6017	PH: (09)443.1788 FAX:(09)443.1817
SOUTH AUSTRALIA	54 SHELDON STREET NORWOOD SA 5067	PH: (08)363.1099 FAX:(08)363.0075

OVERSEAS:

Overseas users should contact their local distributor.

If there is no local distributor, please contact Head Office:- New South Wales, AUSTRALIA.