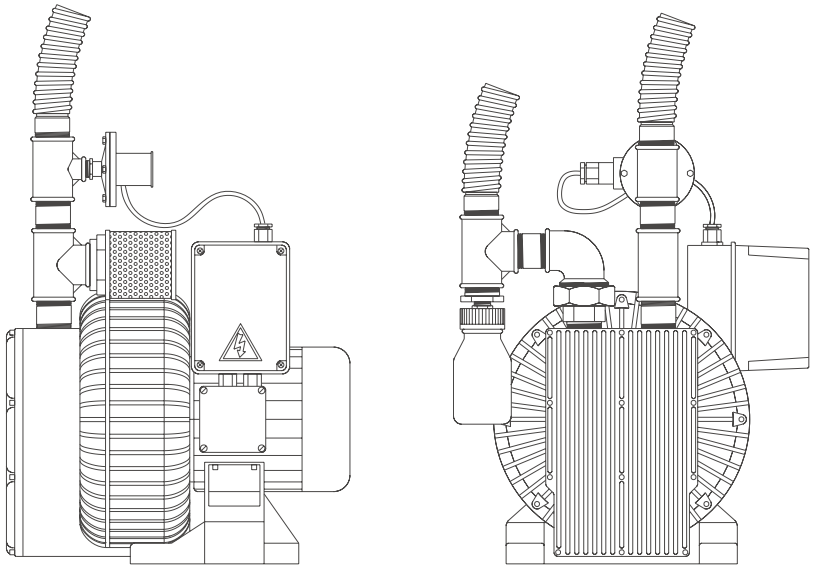
Simplex Anaesthetic Gas Scavenging System

Installation, Operation & Maintenance

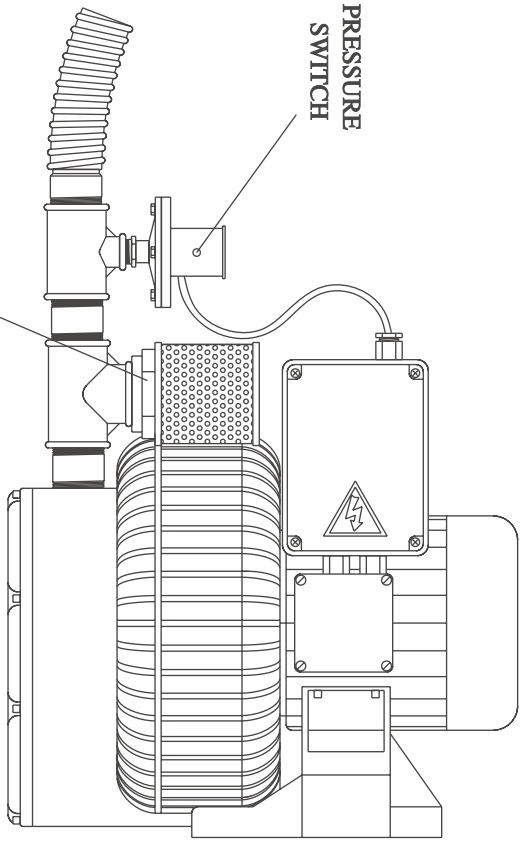


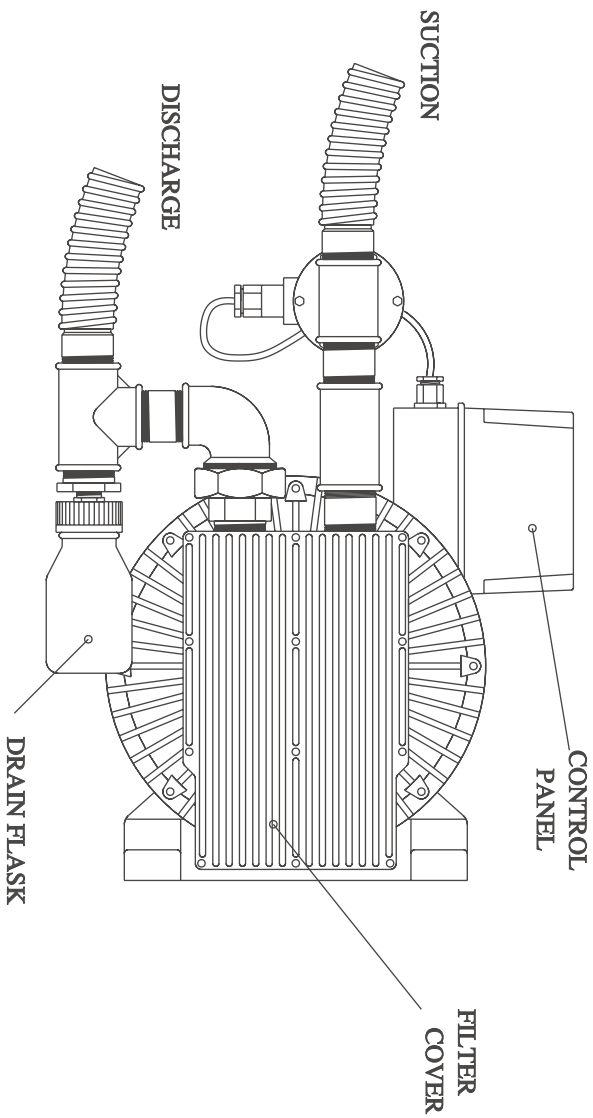
Contents

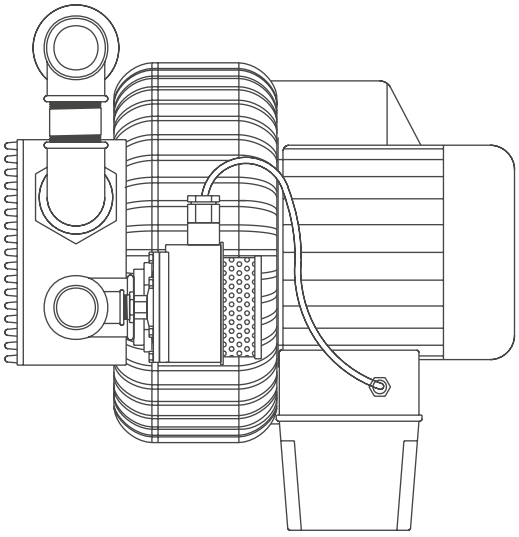
Shire Controls Ltd
Studio 3 Channocks Farm
Gilston
Harlow
Essex
CM20 2RL

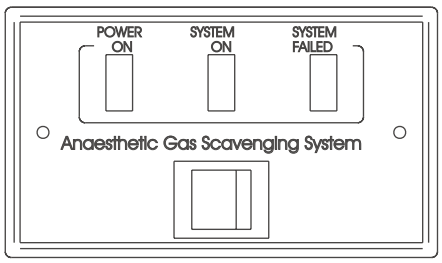
CE

Issue 5 20-12-2002



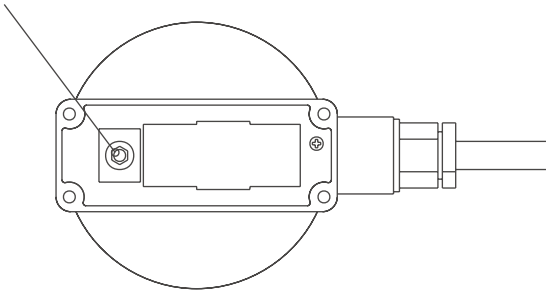






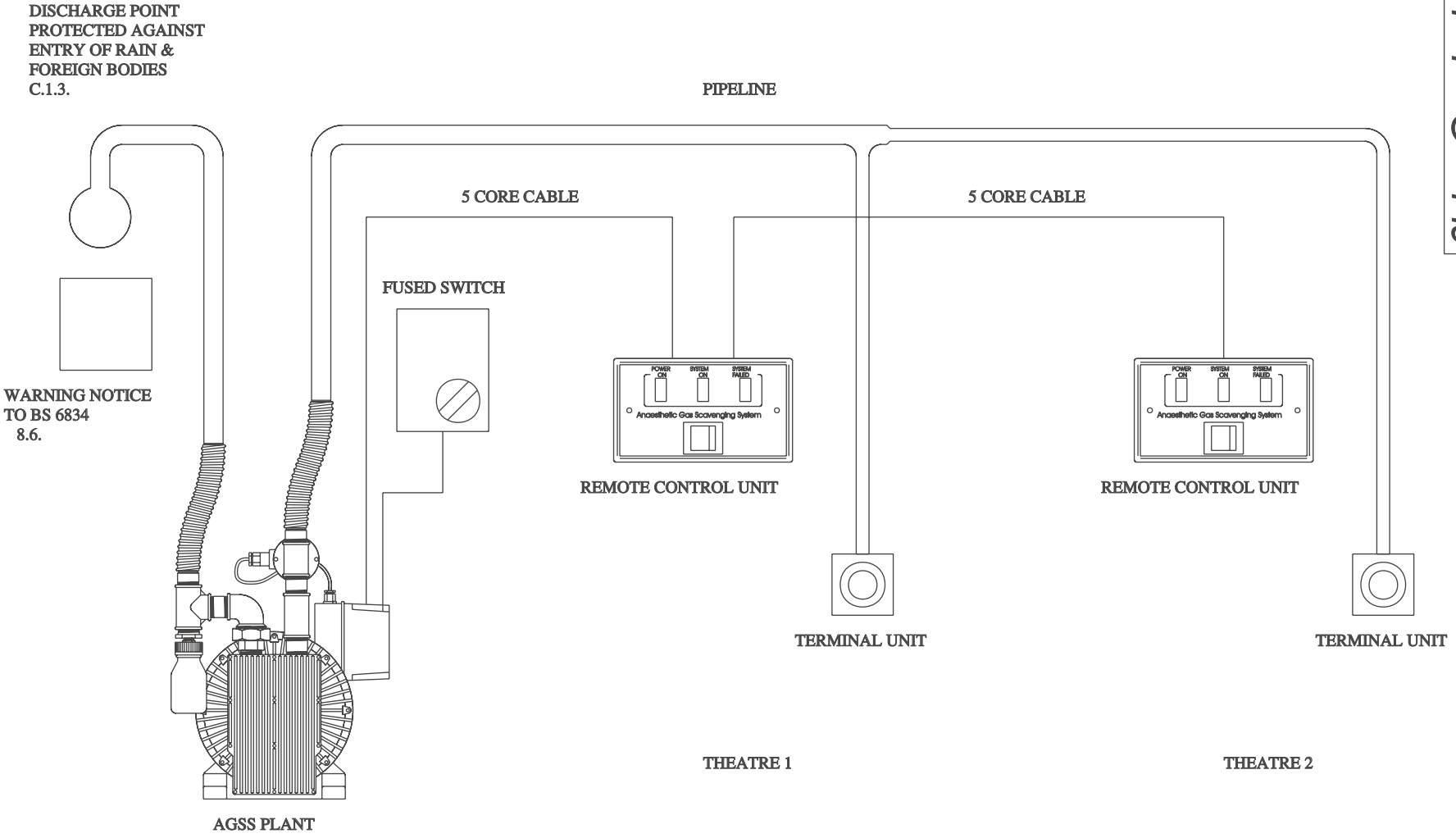
REMOTE CONTROL UNIT

ADJUSTING NUT



PRESSURE SWITCH

Shire Controls Ltd			
Title	BASIC SIMPLEX AGSS GENERAL LAYOUT		
Drawing No	WAGB4		
Date	20-12-2002	Issue	3



Shire Controls Ltd

Title: TYPICAL SIMPLEX AGSS DISPOSAL SYSTEM

Drawing No: WAGB12

Issue: 1

Date: 08-12-94

About this manual.

When you see this symbol, the associated text in **bold** type refers to Something which may cause danger or damage.

Environment.

This plant is designed to be used in a dry environment with no abnormal levels of airborne dust. It is designed to work within the following parameters.
Temperature +5 to +35 deg.C. (+40 deg.C. Maximum)
Max. Humidity 90% RH Max.
Altitude 1000m above sea level
For areas which may be washed down, a remote control unit protected to IP 64 is available.

Noise

The noise level in dB(A) of the pump is as follows.

SGK200	56	SKG340	70
SKG230	59	SKG390	77
SKG2S0	60	SKP253 20	64
SKG275	63	SKP302 20	67
SKG300	67	SKP358 26	71

NOTE. Additional noise will be produced by the balance valve. The level of noise will depend on the setting of and flow through the valve.

Mounting

Consideration should be given to the likely hood of the plant being struck by passing traffic & additional protection provided if necessary. The plant must be fixed by means of the three mounting holes in the base of the plant. The anti-vibration mountings supplied with the plant must be positioned over the fixings used before mounting the plant.

The anti-vibration mountings must not be compressed by the fixings. Adequate room must be allowed for access to the f ilter chamber on the end of the pump for routine maintenance. Ensure a free flow of air to the motor. **If the pump is mounted in an enclosure, allow a minimum of 3 cubic metres per kilowatt of motor power of air space within the enclosure**.

Electrical Connections.

The plant must be supplied from a fused switch, complying with EN60947-3, category AC-23B, with provision for locking in the OFF position, mounted between 0.6 and 1.9 metres above the servicing

level in an easily accessible position. The fuses must be capable of breaking the prospective short circuit current. The fuse rating must not exceed 13 Amps. Motor rated fuses should be used, using the nearest value above the running current of the motor. The earth fault loop impedance of the supply at the plant terminals must not exceed 1 ohm.

Type	Power (kW)	Current (1 phase)	Current (3 phase)
SKG200-2V	0.37	4.1	1.5
SKG230-2V	0.37	4.1	1.8
SKG250-2V	0.75	7.5	2.75
SKG275-2V	1.5	10.0	3.6
SKG300-2V	2.2	NA	4.5
SKG340-2V	3.0	NA	6.7
SKG390-2V	4.0	NA	9.5
SKP253-20	0.55	7.5	1.6
SKP302-20	1.5	NA	3.4
SKP358-26	2.2	NA	5.4

Three phase plant.

Note. This plant requires a neutral. See Drawing WAGB8

Single phase plant.

See Drawing WAGB 10

All plant.

Do not use this plant with any control, indication or interface system other than that supplied by the manufacturers. A relay interface is available giving volt-free contacts rated at 5 amps, 240 volt resistive, for Power on, System on and System failed signals, and providing input terminals for control from volt-free contacts.

When using remote control units or relay interfaces, connect the terminals on the lower edge of the printed circuit board in the control panel marked RUN, SF, -Ve, +Ve & CTL to the corresponding terminals on the remote control units or relay interfaces. A maximum of 6 remote control units may be used with a control panel. The voltage drop on the cable to the remote control units should not exceed 1.2 volts.(the current drawn is .017 amps per remote control unit + .03 amps . 6 remote control units could be used on 300 M of l.5mm cable) Cable exceeding 2.5mm should not be used

When using a relay interface, connect the terminals marked "Local"' on the relay interface to the contacts which will control the plant e.g. theatre panel switch. **These contacts must be volt-free.** Use the contacts on the relay interface to switch other circuits as required. **When using the relay interface to switch indicator lamps on theatre panels etc. we strongly recommend that both System On and System Failed conditions are displayed as a minimum**, and that lamps are used which are of equal brightness and reliability to the lamps used on the standard remote control unit. When not using remote control units or relay interfaces, link the terminals marked +Ve & CTL.

A local OFF switch may be connected to the terminals marked "LOCAL".. When this switch is off, the plant will not run. When it is on, the plant will run when a remote control unit is turned on.

This switch must not be used to prevent the pump starting whilst maintenance is carried out on the plant. If the location or installation of the plant requires a stop button local to the plant, a lock-off emergency stop button or similar device should be connected across the "LOCAL" terminals im the control panel after removing the link.

Mechanical

Connect the suction & discharge hoses to the plant and pipelines as shown on drawing WAGBl2.

Setting up

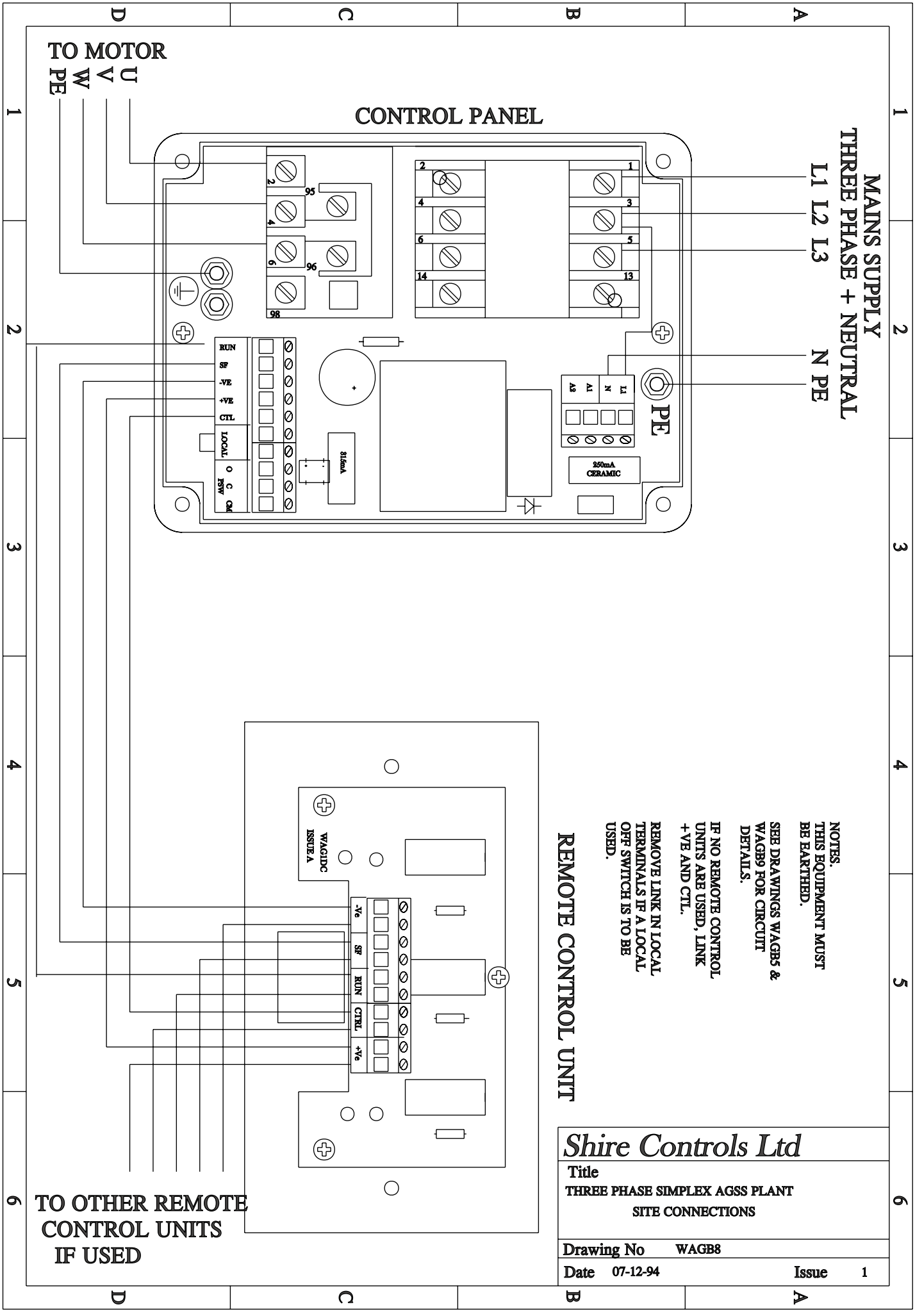
Check the rotation of the motor on three phase plant. if the rotation is incorrect, isolate the supply and reverse two phases.

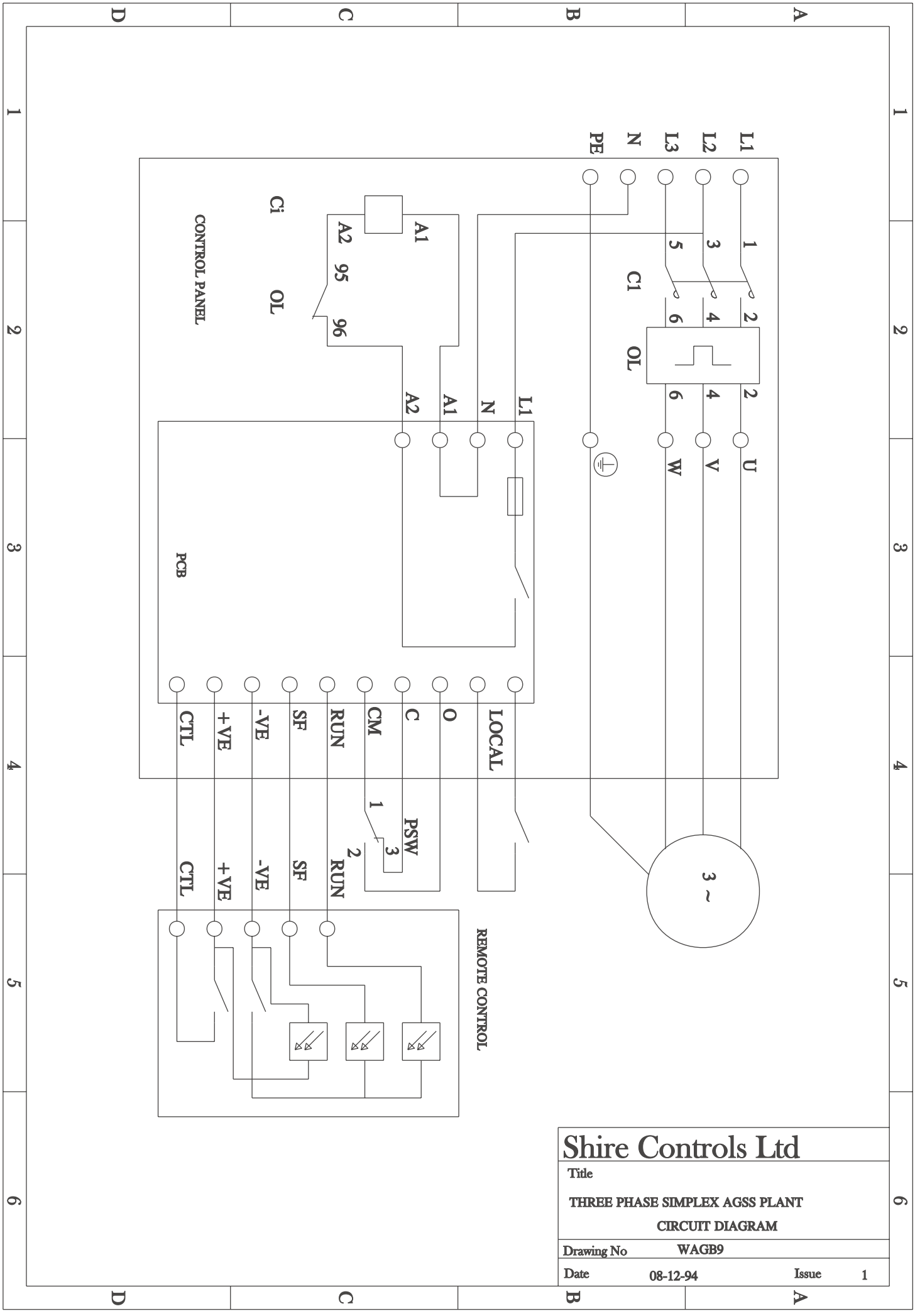
With all remote control units switched off, check that the pump is not running and that all remote control units show a Power On lamp. Switch on each remote control unit in turn. As the pump switches on, the System Failed lamp will come on momentarily as the pump produces vacuum in the pipeline followed by the System On lamp. Switch off this remote control unit & continue to the next.

If the System failure lamp does not operate correctly, reset the pressure switch as follows. Disconnect the suction hose from the plant. Switch on the plant. If the System Failure lamp is on turn the pressure switch adjusting nut (see drawing WAGB4) anti-clockwise until the System Failure lamp goes out. Turn the adjusting nut clockwise until the System Failure lamp comes on and continue for 3/4 turn. If the system is operated at a very low vacuum, it may be necessary to use a lower setting. Replace the suction hose and pressure switch cover.

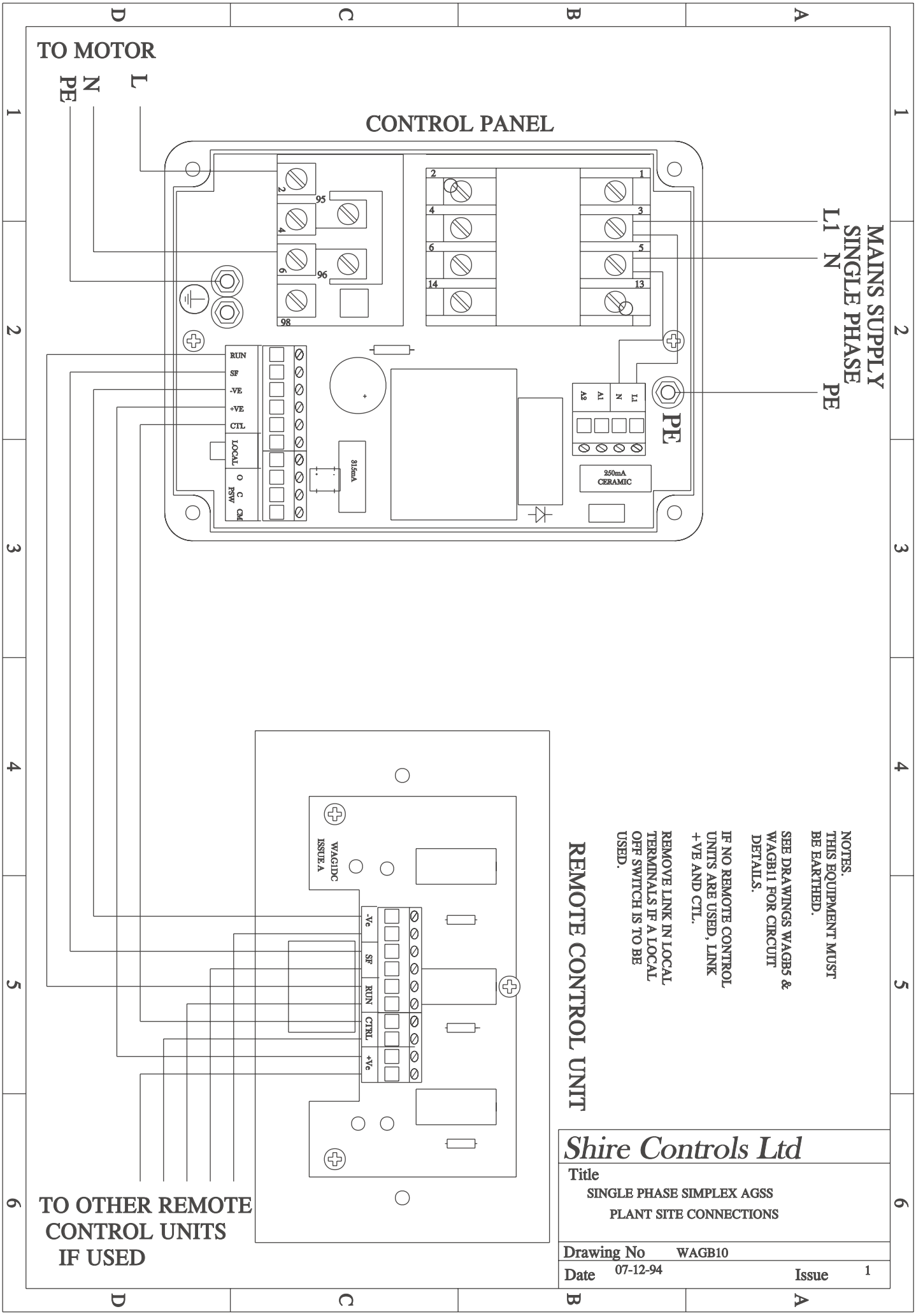
Set up the system flow as described in BS 6834, using the balance valve to set the operation vacuum in the pipeline.

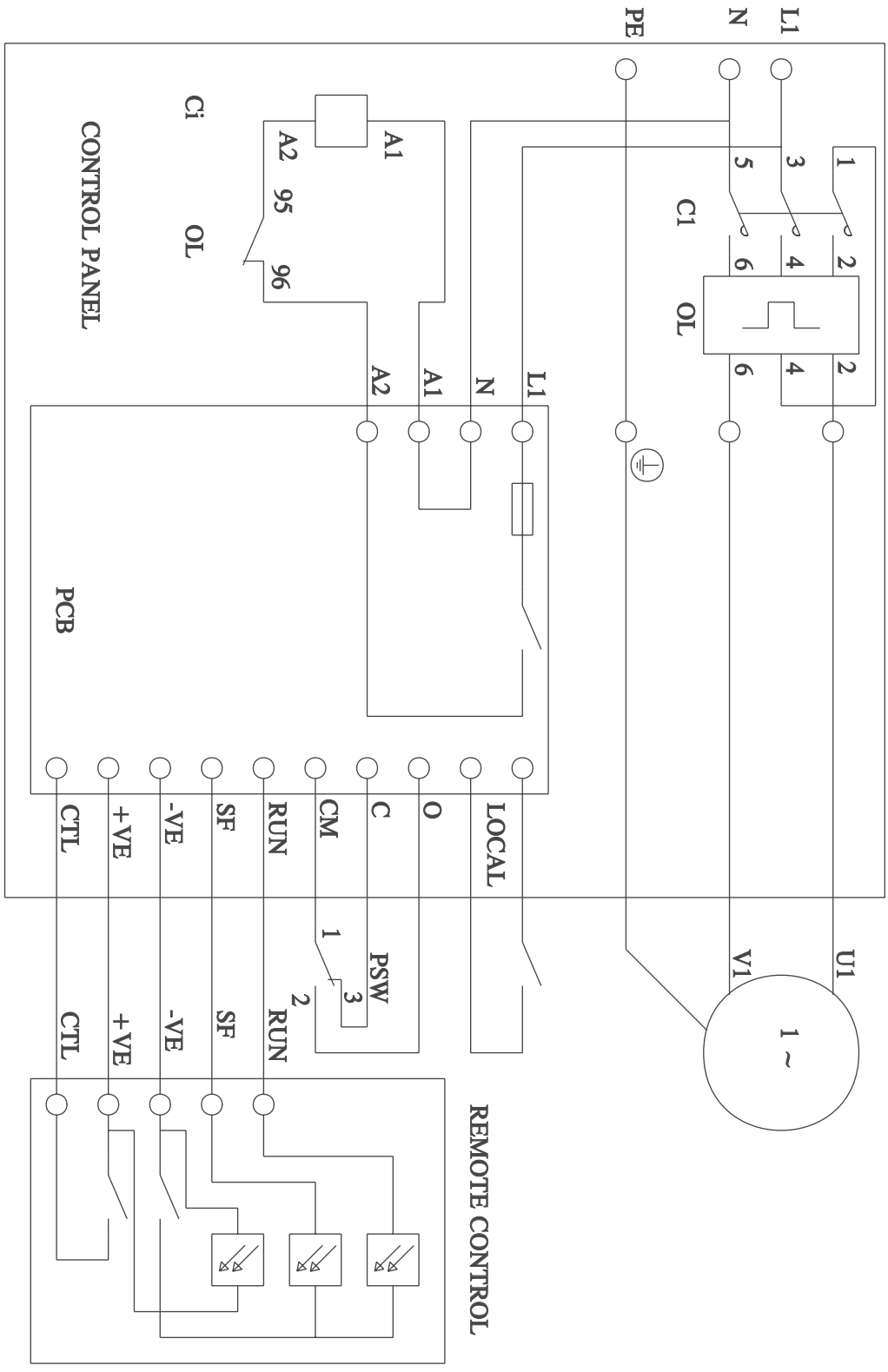
Continued on page 11


TO MOTOR
PE
W
V
U
CONTROL PANEL
MAINS SUPPLY
THREE PHASE + NEUTRAL
L1 L2 L3
N PE
RUN
SF
-VE
+VE
CTL
LOCAL
250mA
CERAMIC
PE
NOTES.
THIS EQUIPMENT MUST BE EARTHED.
SEE DRAWINGS WAGB5 & WAGB9 FOR CIRCUIT DETAILS.
IF NO REMOTE CONTROL UNITS ARE USED, LINK +VE AND CTL.
REMOVE LINK IN LOCAL TERMINALS IF A LOCAL OFF SWITCH IS TO BE USED.
REMOTE CONTROL UNIT
WAG1DC
ISSUE A
-Ve
SF
RUN
CTRL
+Ve
TO OTHER REMOTE
CONTROL UNITS
IF USED
Shire Controls Ltd
Title
THREE PHASE SIMPLEX AGSS PLANT
SITE CONNECTIONS
Drawing No WAGB8
Date 07-12-94
Issue 1

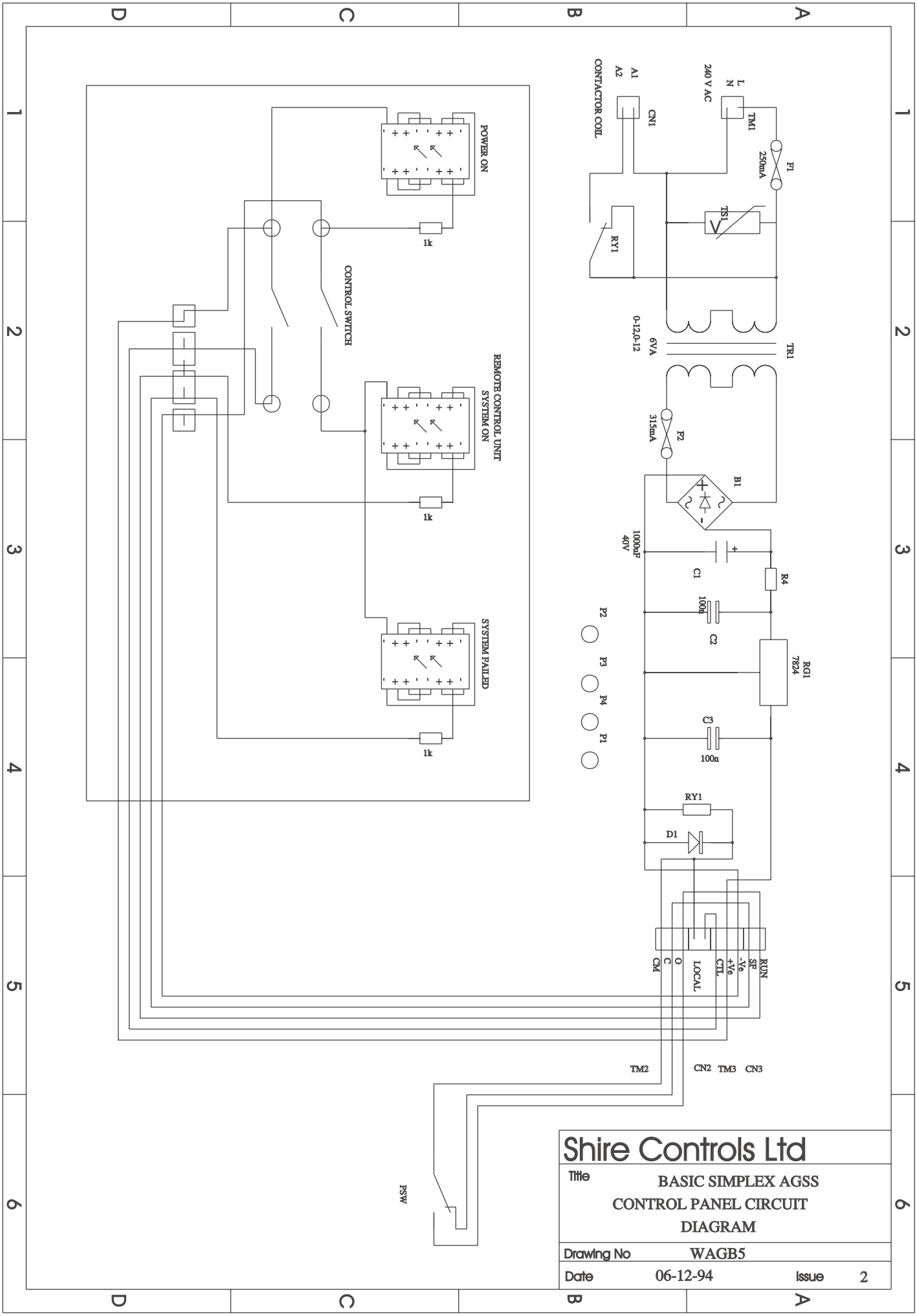


Shire Controls Ltd		
Title	THREE PHASE SIMPLEX AGSS PLANT CIRCUIT DIAGRAM	
Drawing No	WAGB9	
Date	08-12-94	Issue 1


TO MOTOR
PE
N
L
CONTROL PANEL
MAINS SUPPLY
SINGLE PHASE
L1
N
PE
RUN
SF
-VE
+VE
CTL
LOCAL
O
C
FSW
CM
315mA
250mA
CERAMIC
A2
A1
N
L1
NOTES.
THIS EQUIPMENT MUST BE EARTHED.
SEE DRAWINGS WAGB5 & WAGB11 FOR CIRCUIT DETAILS.
IF NO REMOTE CONTROL UNITS ARE USED, LINK +VE AND CTL.
REMOVE LINK IN LOCAL TERMINALS IF A LOCAL OFF SWITCH IS TO BE USED.
REMOTE CONTROL UNIT
WAG1DC
ISSUE A
-Ve
SF
RUN
CTRL
+Ve
TO OTHER REMOTE
CONTROL UNITS
IF USED
Shire Controls Ltd
Title
SINGLE PHASE SIMPLEX AGSS
PLANT SITE CONNECTIONS
Drawing No WAGB10
Date 07-12-94
Issue 1



Shire Controls Ltd	
Title	SINGLE PHASE SIMPLEX AGSS PLANT CIRCUIT DIAGRAM
Drawing No	WAGB11
Date	08-12-94
Issue	1


CONTACTOR COIL
A1
A2
CN1
240 V AC
L
N
TM1
F1
250mA
TS1
RY1
0-12-0-12
6VA
TR1
F2
315mA
B1
1000uF
40V
C1
R4
100n
C2
RG1
7824
C3
100n
RY1
D1
CM
C
O
LOCAL
CTL
+Ve
-Ve
SF
RUN
TM2
CN2
TM3
CN3
POWER ON
1k
CONTROL SWITCH
REMOTE CONTROL UNIT
SYSTEM ON
1k
SYSTEM FAILED
1k
P2
P3
P4
P1
FSW
Shire Controls Ltd
Title
BASIC SIMPLEX AGSS
CONTROL PANEL CIRCUIT
DIAGRAM
Drawing No
WAGB5
Date
06-12-94
Issue
2

IMPORTANT. Ensure that an air flow is maintained through the pump via the balance valve when all terminal outlets are closed. Failure to allow an air flow will result m over-heating of the pump with possible damage to the pump, motor and hoses and possible injury to personnel. The following minimum flow rates should be observed:

SKG200 to SKG340	30 l/m
SKG390	350 l/m
SKG420	9751 l/m

Operation.

Switching on any remote control unit will start the plant. Indication of system on or system failure will only be given at any remote control unit which is switched on. Any units switched off will show power on only. The plant will continue to run until all remote control units are switched off. On initial start-up, the system failure lamp will show momentarily as the pump produces a vacuum in the pipeline. This will change to system on as vacuum is produced.

Maintenance

The inlet silencers should be checked periodically & cleaned or replaced as necessary. Access to the silencers is by removal of the finned cover on the end of the pump. The filter covering the balance valve must be cleaned periodically. The frequency of these inspections will depend on operating environment & should be determined by experience.

Every 6 months. Disconnect the suction hose from the plant. Go to each remote control unit or other point at which the plant conditions are displayed in turn. Turn the plant on & check that the System Failed lamp comes on. Turn off the plant & repeat for all other control positions.

Parts list

Pump	See name plate on pump mounting foot	Werner Reitschle
Balance valve		Esam
Drain flask		Shire controls Ltd
Pressure switch	Type 157 -400 Bar	Bailey & Mackey
Control panel box	GW4-4216	Gewiss
Control panel PCB	WAGB	Shire Controls Ltd
Contactor	01 044050 240	MTE
Overload	01 000130 0XX (dependant on plant size)	MTE
Fuse Fl 500mA ceramic S501 500mA		Bussmann
Fuse F2 315mAS500 315mA		Bussmann
Remote control unit	Simplex remote control unit	Shire Controls Ltd

DECLARATION OF CONFORMITY

73/23/EEC

89/336/EEC The EMC Directive

Manufacturer

Shire Controls Ltd
Studio 3
Channocks Farm
Gilston
Harlow
Essex
CM2O 2RL
United Kingdom

Product Type

Simplex Anaesthetic Gas Scavenging Plant

Model..... Serial No.....Voltage V
Current..... A Phases.....Frequency ..... Hz
Maximum Prospective Fault Current..... kA
Drawing No WAGB5 issue 2
Year of manufacture .....

Standards used

BS EN 292 : part 1 : 1991 BS EN 292 : part 2: 1991
BS EN 60204-1:1993 B S EN 50081-1
BS EN 50082-1 BS EN 61000-3-2

Authorized representative
I.R.Couchman Technical Director
Signature