

Simplex Anaesthetic Gas Scavenging System

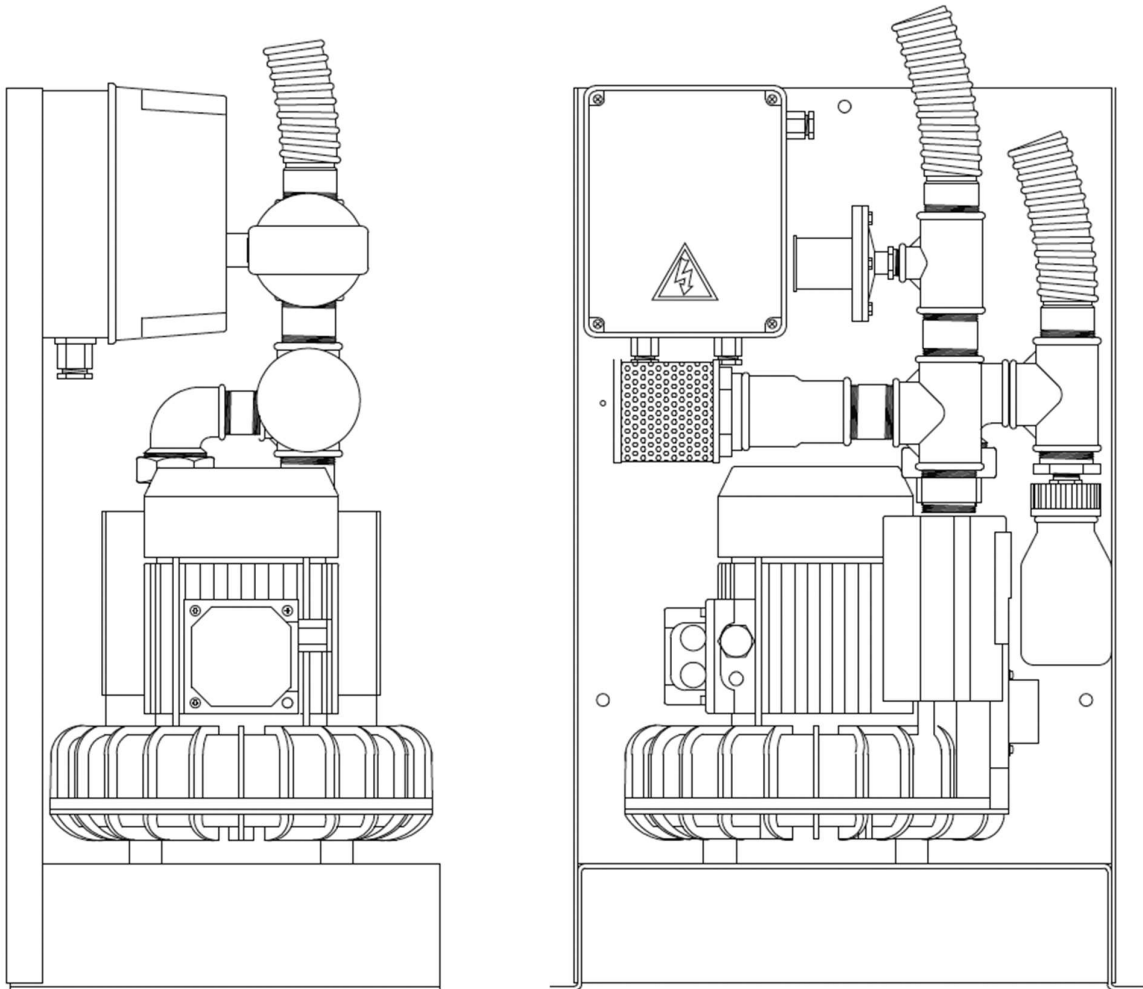


Table of Contents

About this manual 4

Environment 4

Mounting..... 4

Electrical connections 4

Mechanical 6

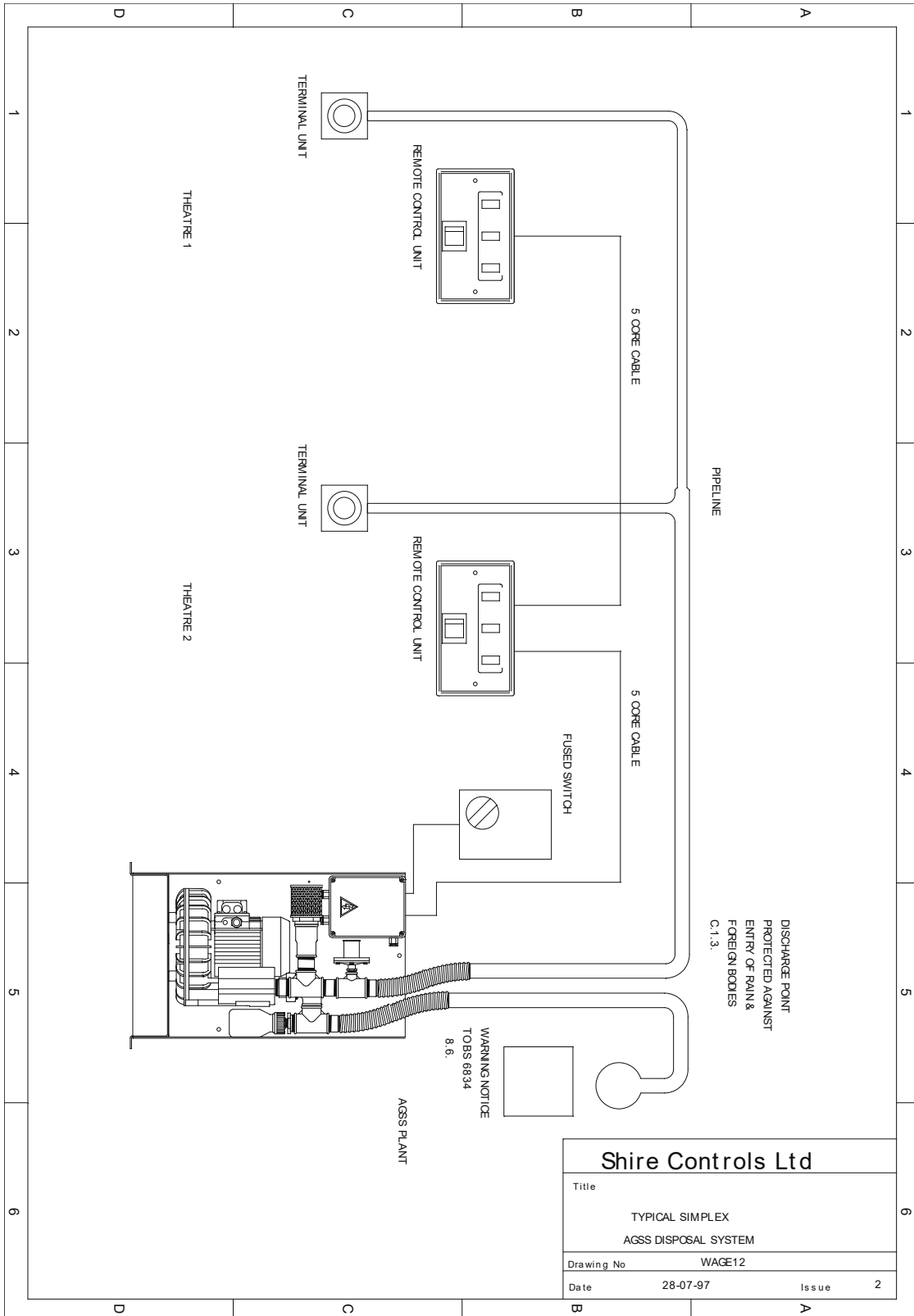
Setting..... 6

Operator 6

Operation14

Maintenance14

Parts List.....15



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

Mounting



Consideration should be given to the likelihood of the plant being struck by passing traffic & additional protection provided if necessary. The plant must be fixed by means of the four mounting holes in the frame of the plant. 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 isolator 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 prospective fault current must not exceed 1.5kA. The earth fault loop impedance of the supply must not exceed 1 ohm.

Type	Power (kW)	Current (1 phase)	Current (3 phase)	Noise dB(A) @
1 metre				
AGS120	0.4	3.1	NA	58
AGS120	0.4	NA	1.4	58
AGS130	0.75	5.5	NA	64
AGS130	1.1	6.0	NA	64
AGS130	0.75	NA	2.7	64
AGS130	1.1	NA	3.0	64
AGS141	1.1	7.6	N/A	71

AGS141	1.5	9.0	N/A	71
AGS142	1.5	N/A	4.0	68

Three phase plant.

Note. This plant requires a neutral. See Drawing WAGE8

Single phase plant.

See Drawing WAGE10

All plant.



Replace fuses only with motor rated fuses, rated at the motor full load current. 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 1.5mm 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 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.



Mechanical

Connect the suction & discharge hoses to the plant and pipelines as shown on drawing WAGE12.

Setting

Check the rotation of the motor on three phase plant (see arrow on Pump chassis). 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 only.

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 hoses from the plant.
- Switch on the plant.
 - If the System Failure lamp is on, turn the pressure switch adjusting nut (see drawing WAGE4) 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 current standards, using the balance valve to set the operation vacuum in the pipeline.

Operator

Typically the operator should be at one of the 6no Remote Control Switches. Technical servicing would be at the Control Panel at the main plant.

Each Remote Control Switch Unit includes:

- Three long-life, block LEDs which show the conditions of the service through a wipe-clean membrane. The inherent design includes Red/Green LED variations as per industry HTM guidelines and the use of colour recognition ensures that the unit can be monitored comfortably from a distance of 3-4 metres.

- A On/Off rocker switch. This comprises two poles.
 - One pole to ‘call’ the pump and switches on the vacuum, by bring the CTRL to +Ve.
 - One pole to enable the Duty Run, Standby In Use or System Fault LEDs.
 - (the Power ON LED will be ON whenever the Plant Isolator is ON)

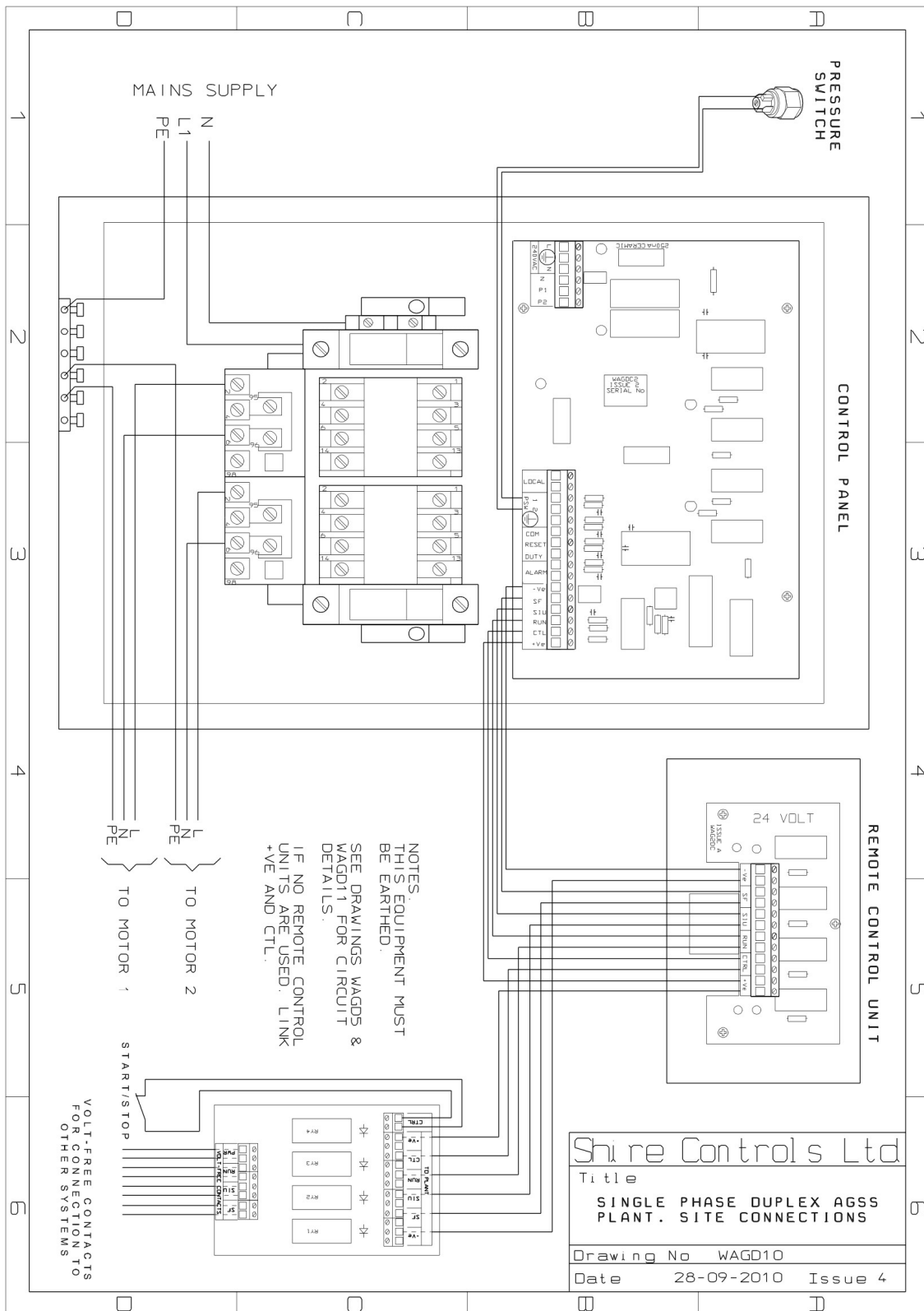
The Central Plant Control Panel Includes:

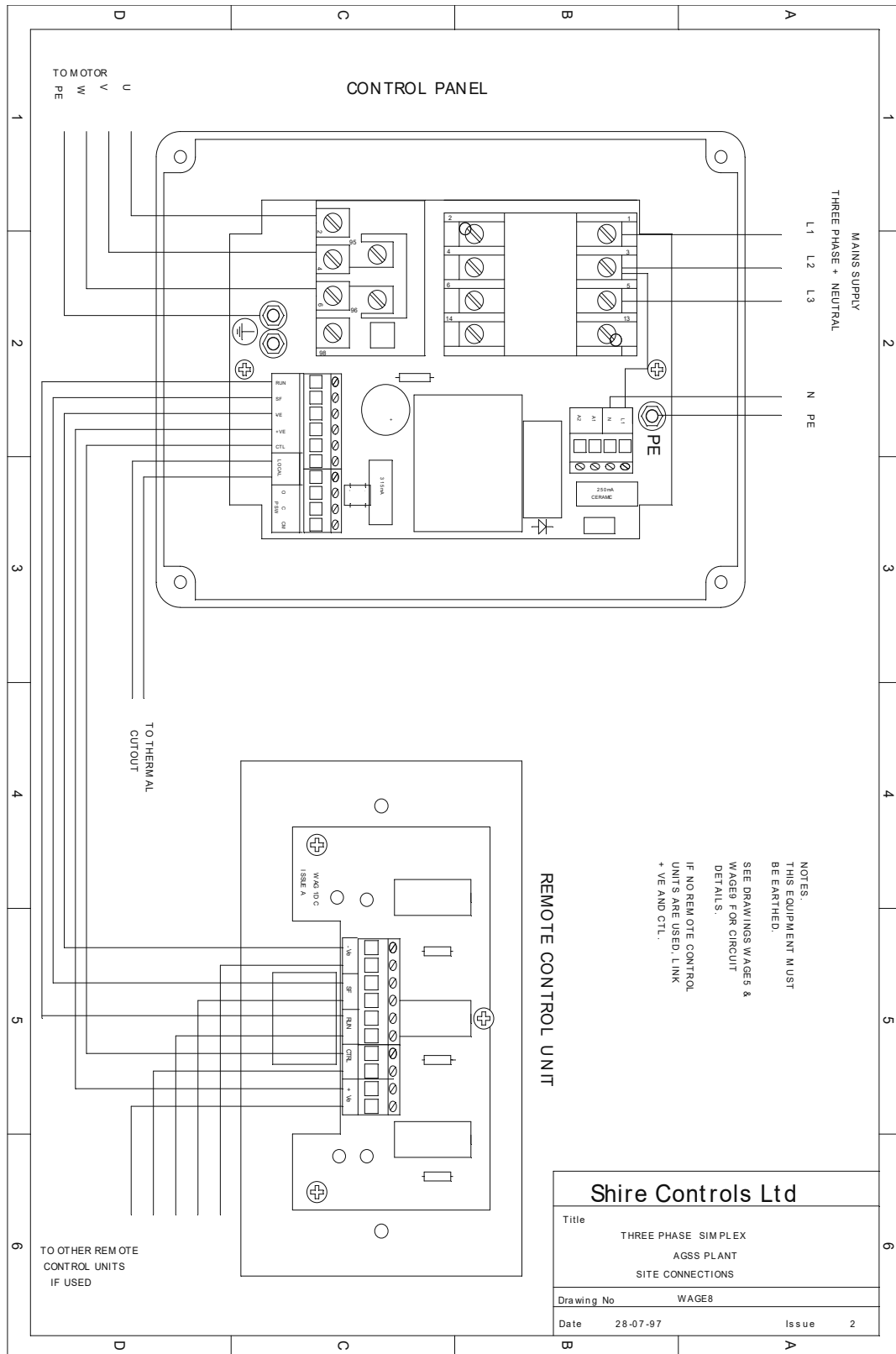
- Thermal Trip. Where the pump chassis has reached 85deg C (or higher) the Thermal Trip will fail open circuit to switch the Pump Off, this will cause the System Fault LED to show on each remote control unit.

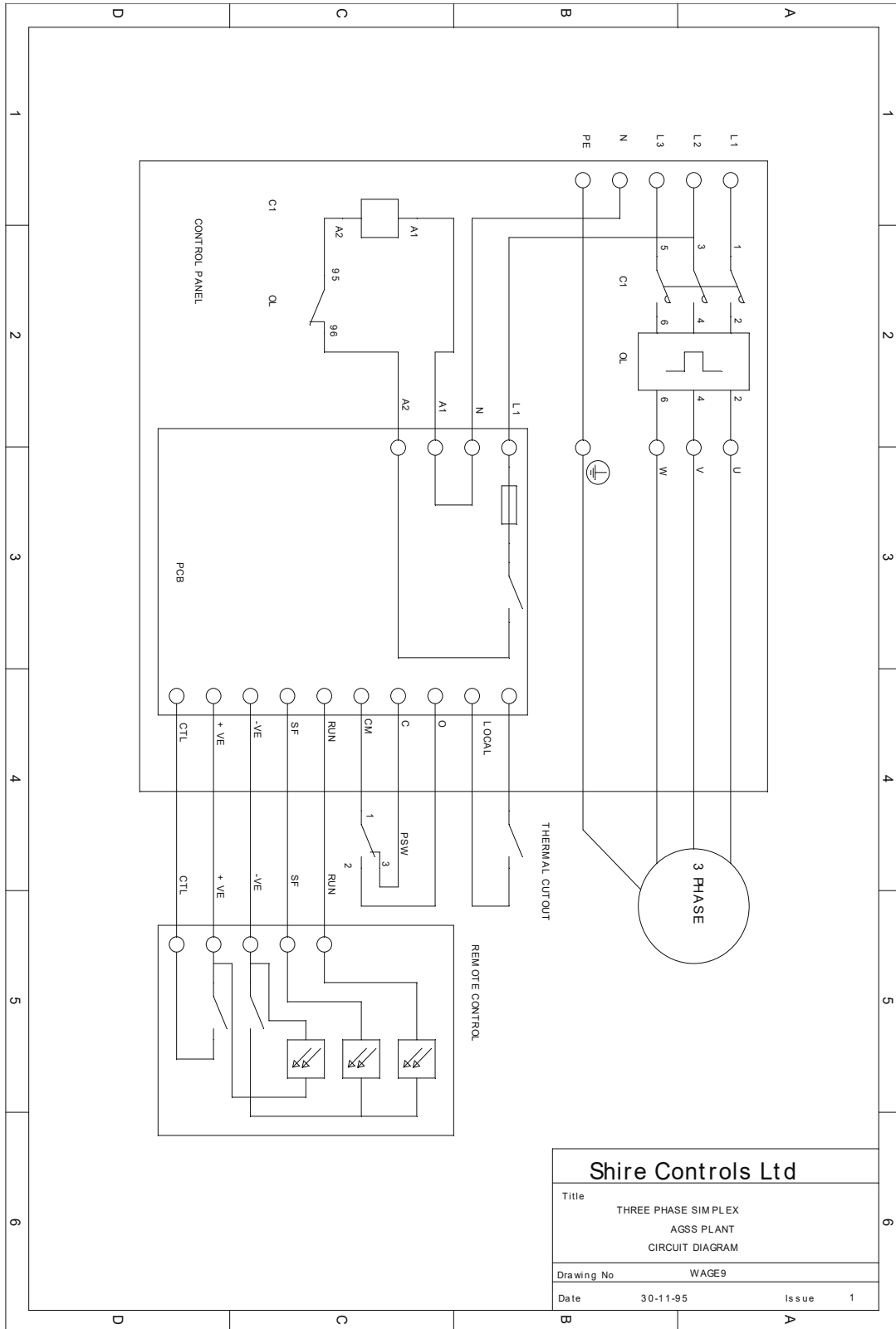


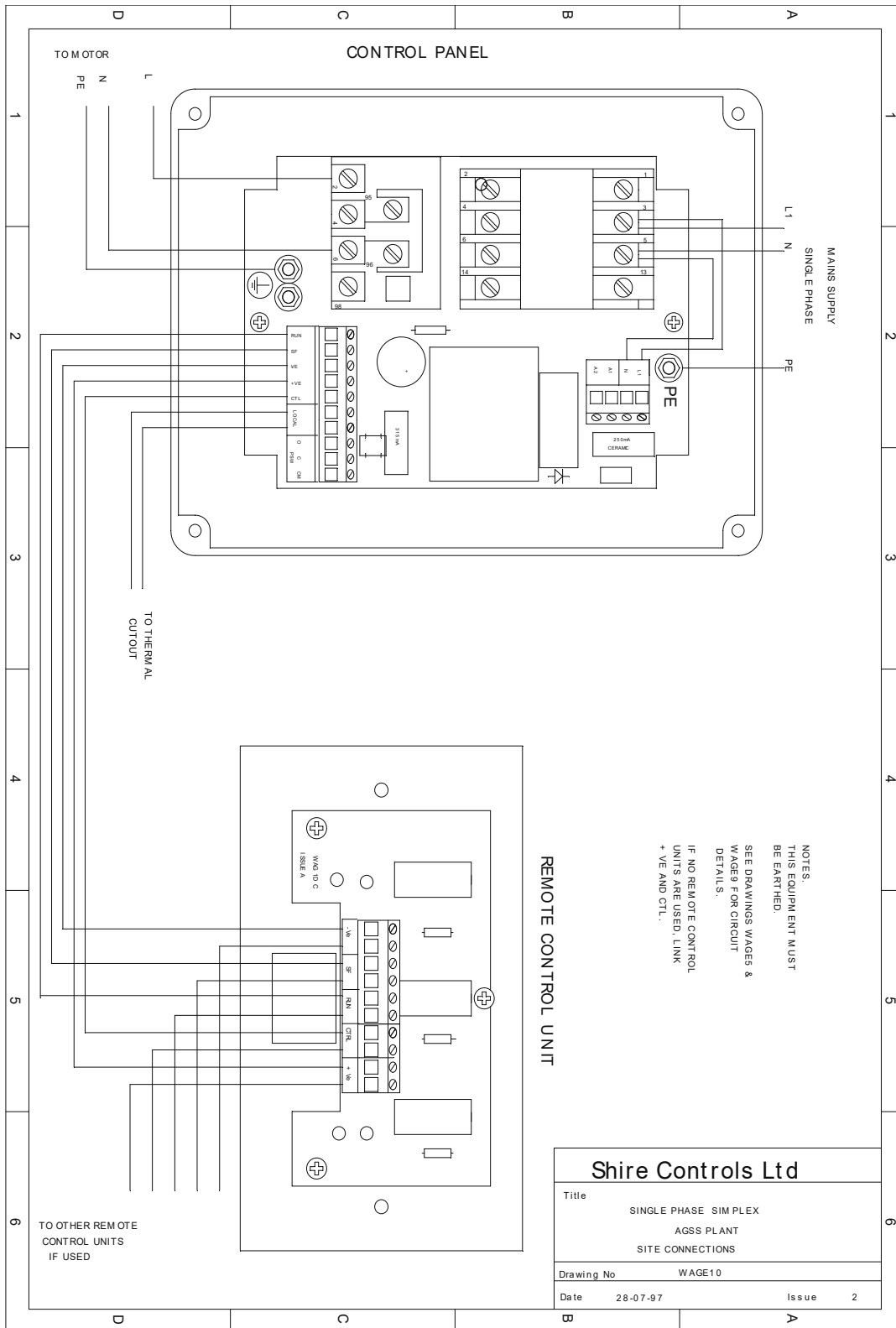
The Thermal trip switch is in series with the 230vac switched feed to the contactor coil (which is used to switch on/off the 1 or 3 phase Pump supply). The thermal trip cover carries a Main Warning label indicating the 230vac present through the Thermal Trip. Follow these steps:

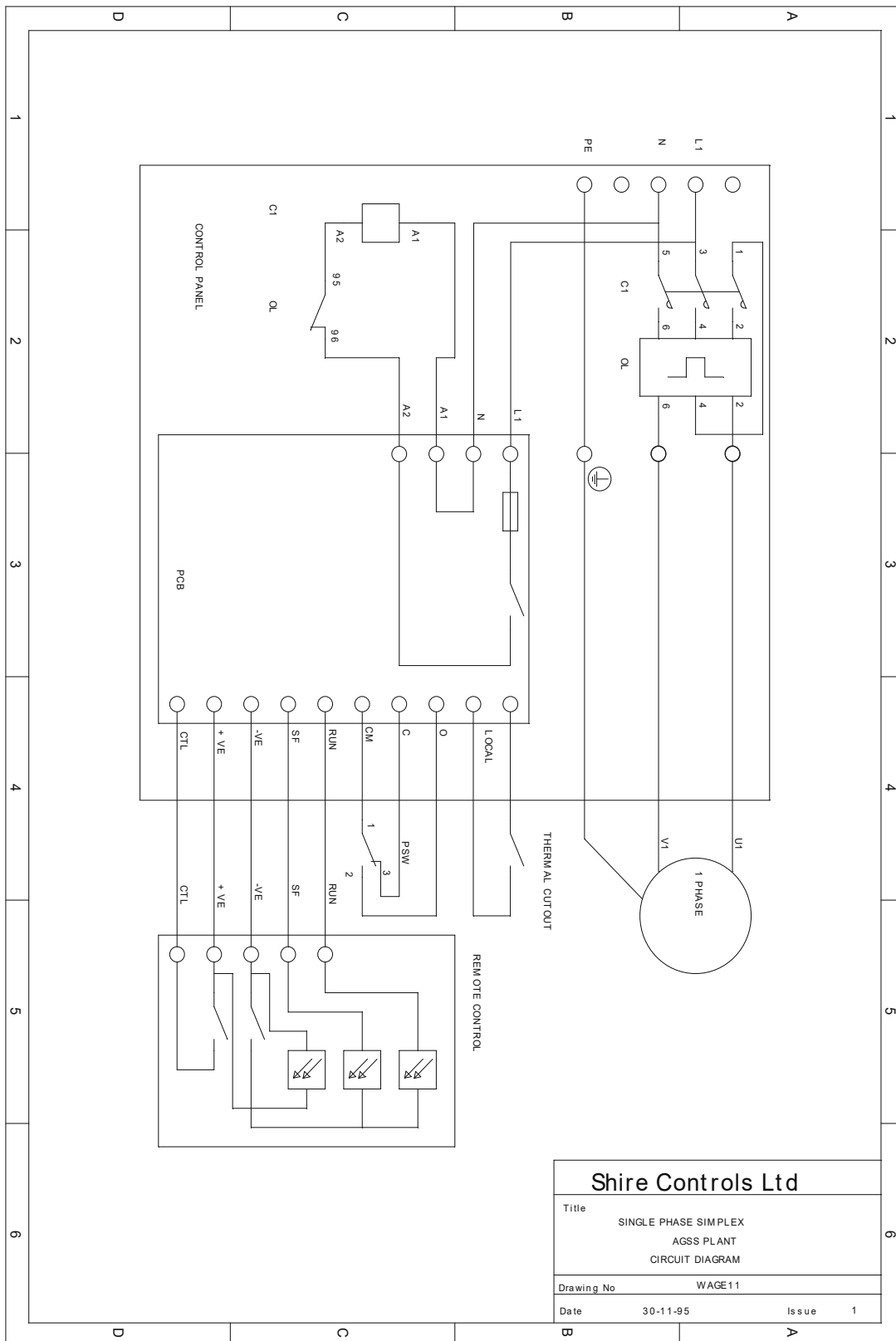
- Isolate the power to the Plant.
- Remove the cover.
- Press the reset button within.
- Replace The cover.
- Resume the power to the plant.

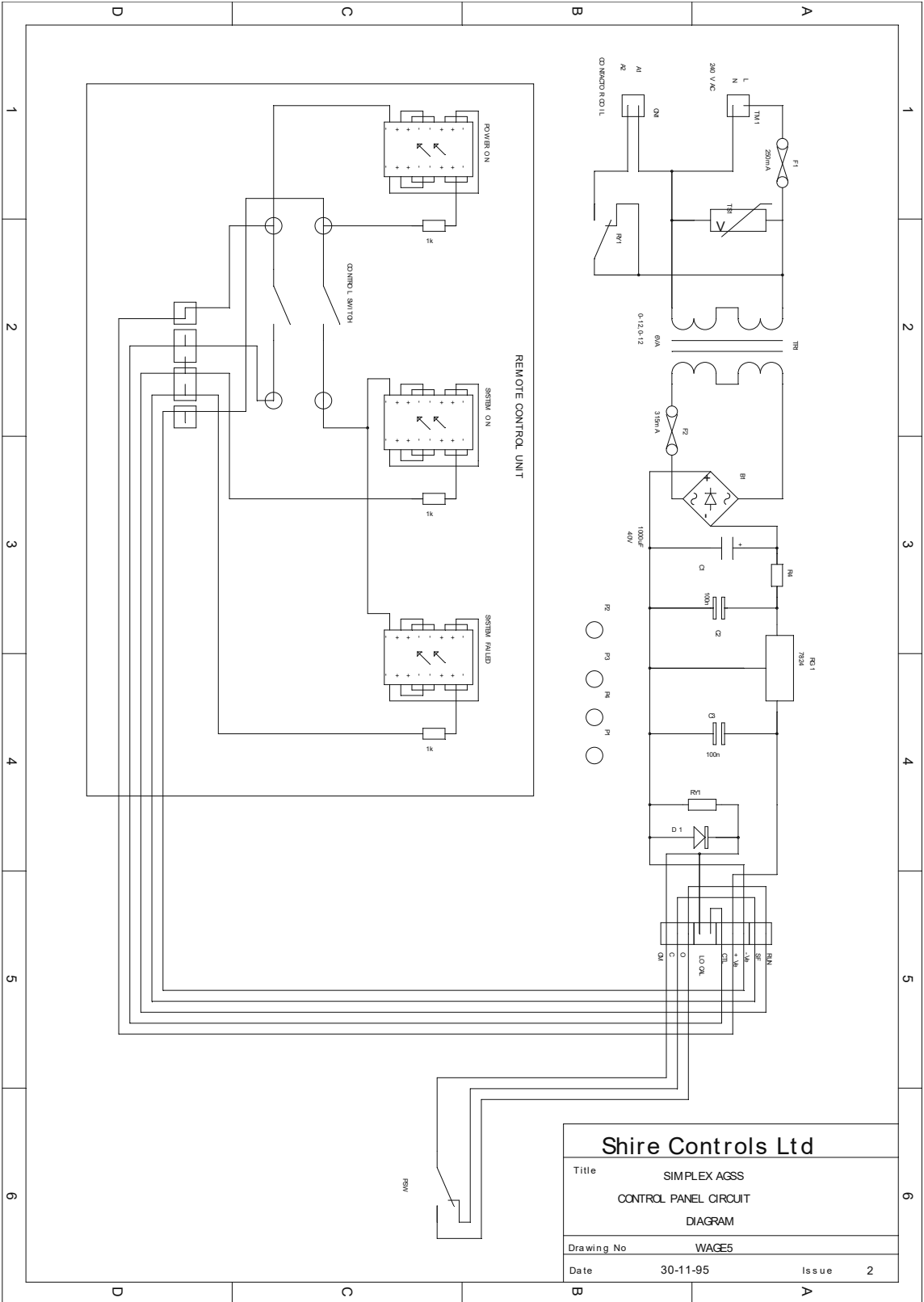












Shire Controls Ltd	
Title SIMPLEX AGSS CONTROL PANEL CIRCUIT DIAGRAM	
Drawing No WAGE5	
Date 30-11-95	Issue 2



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 in overheating 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.

AGS120 = 130 l/m

AGS130 = 650 l/m

AGS141 = 1170 l/m

AGS142 = 845 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. If the pump fails to produce vacuum, the System Failed lamp will show.

The pump is protected against overheating by a thermal cut-out mounted on the end of the pump (see drawing WAGE4). If the thermal cut-out operates, reset the cut-out by isolating the plant, removing the cover (with main warning label affixed) & pressing the reset button. Establish the cause of the overheating before putting the plant back into service. Two likely causes of overheating are a lack of air flow through the pump when no outlets are in use, or inadequate ventilation for the pump and motor cooling.

An alarm output in the form of volt-free contact is closed under normal operating conditions, rated at 50 V dc, 50mA. This contact will open if the power fails or the pump fails to draw the designated vacuum set on the pressure switch.

Maintenance

The filter on the balance vane must be cleaned or replaced periodically. The frequency of these inspections will depend on operating environment & should be determined by experience.

Every 6 months.

- Switch Off the mains supply from the nearby Isolator (by others).

- Remove mains fused protection between Isolator and Control Panel (also by others).
- Switch the Isolator back on.
- Disconnect the suction hose.
- Go to each remote control unit (at which the plant conditions are displayed) in turn.
- Check that the System Failed lamp comes on.
- Replace the suction hose.

Parts List

Control Panel	agsssimplxxxx_xxpanelxph	Shire Controls Ltd
Pump	See name plate on pump	Esam
Balance valve	SH215	Shire Controls Ltd
Drain flask	SH377	Shire Controls Ltd
Pressure switch	Type 157 -400 mBar	Bailey & Mackey
Cre-A-Flex Hose		
1.5Inch	SH375	Shire Controls Ltd
2 inch	SH381	Shire Controls Ltd
Control Panel Box	GW44217	Gewiss
Control PCB	WAGB	Shire Controls Ltd
Contactator	3RT10 17-1AP01 & SH357	Siemens or Shire Controls Ltd
Overload	3RU1116-1**0 & SH**	Siemens or Shire Controls Ltd
Alternatives:-		
Contactator	BF 16.40	Lovato
Overload	RF 25.*	Lovato
Fuse F1 250mA ceramic	S501 250mA	Bussman
Fuse F2 & F3 2A	S500 315mA	Bussman
Remote control (Flush)	wag2240f	Shire Controls Ltd
Remote control (Surface)	wag2240s	Shire Controls Ltd
AGSS Relay Interface	Wagrid	Shire Controls Ltd