Duplex Anaesthetic Gas Scavenging System Control Panel

Installation, Operation & Maintenance
Control Type A

Contents

Shire Controls Ltd
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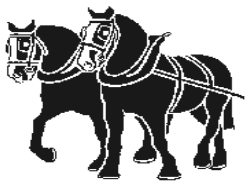

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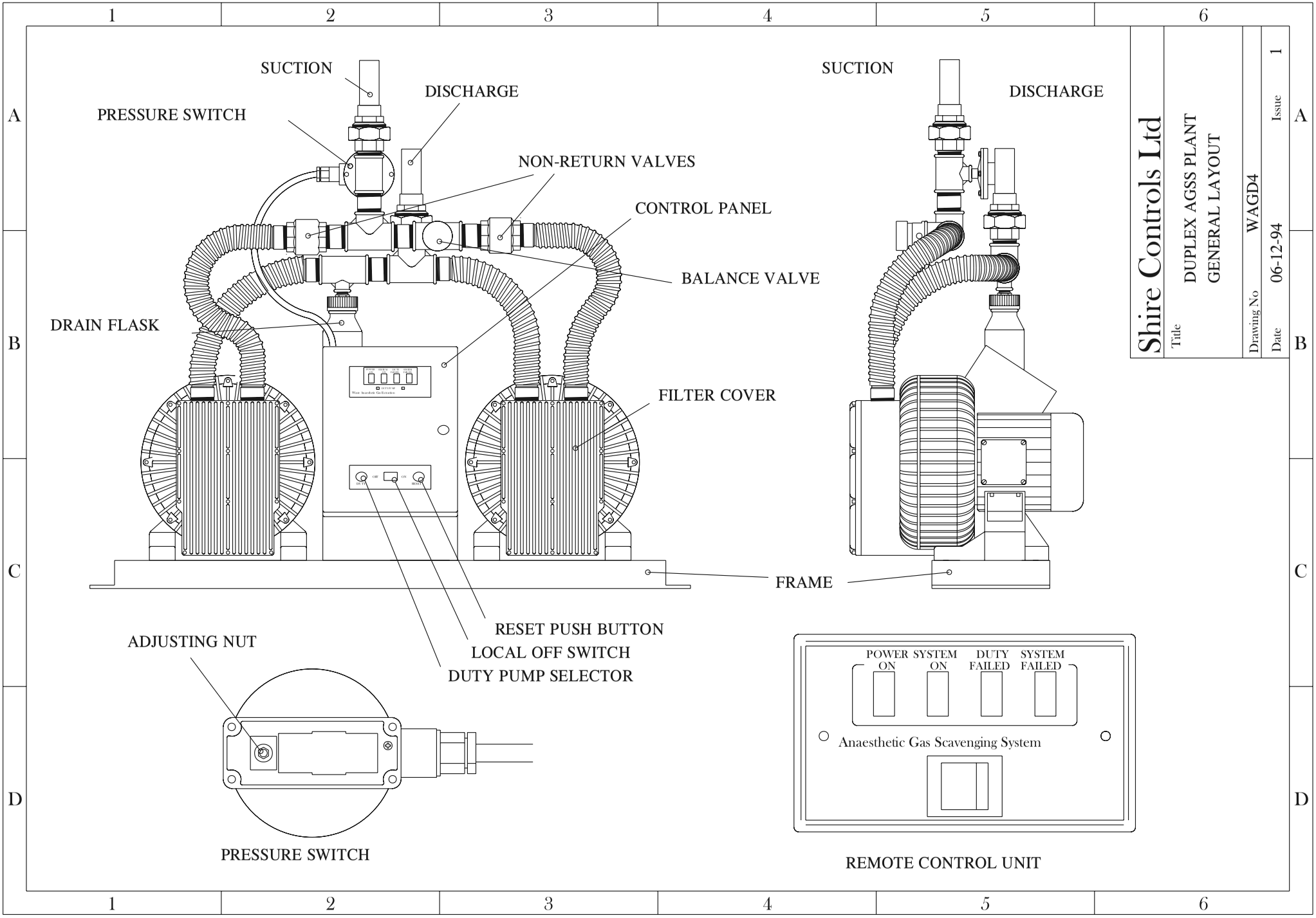
Issue 5 01-08-2001


SUCTION
DISCHARGE
PRESSURE SWITCH
NON-RETURN VALVES
CONTROL PANEL
BALANCE VALVE
DRAIN FLASK
FILTER COVER
FRAME
RESET PUSH BUTTON
LOCAL OFF SWITCH
DUTY PUMP SELECTOR
ADJUSTING NUT
PRESSURE SWITCH
POWER ON
SYSTEM ON
DUTY FAILED
SYSTEM FAILED
Anaesthetic Gas Scavenging System
REMOTE CONTROL UNIT
Shire Controls Ltd
Title
DUPLEX AGSS PLANT
GENERAL LAYOUT
Drawing No
WAGD4
Date
06-12-94
Issue
1

DISCHARGE POINT
PROTECTED AGAINST
ENTRY OF RAIN &
FOREIGN BODIES
C.1.3.

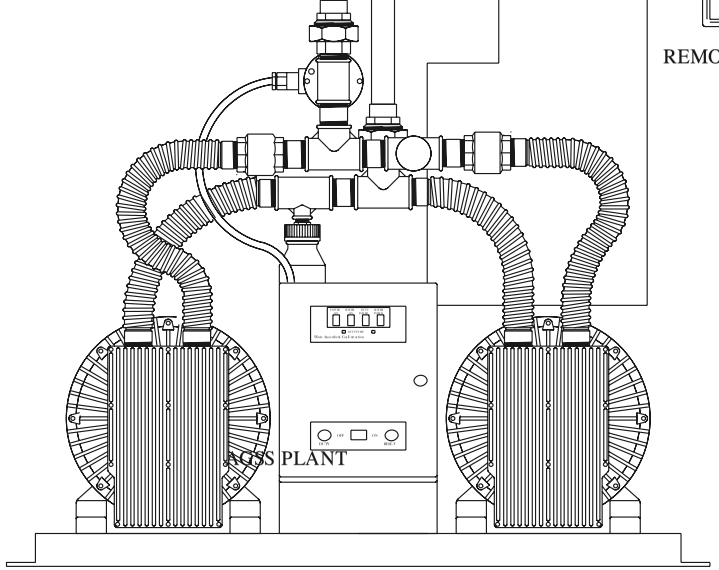
PIPELINE

6 CORE CABLE

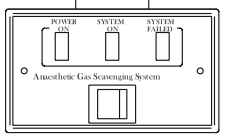
6 CORE CABLE

WARNING NOTICE
TO BS 6834
8.6.

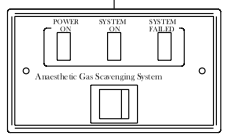
ISOLATOR



AGSS PLANT



REMOTE CONTROL UNIT



REMOTE CONTROL UNIT

TERMINAL UNIT

TERMINAL UNIT

THEATRE 1

THEATRE 2

Shire Controls Ltd

Title: TYPICAL DUPLEX AGSS DISPOSAL SYSTEM

Drawing No: WAGD12

Date: 09-01-95

Issue: 1

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 control panel 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.

Electrical Connections.

The plant must be supplied from an isolator 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 prospective fault current must not exceed l.SkA.The earth fault loop impedance of the supply at the plant terminals must not exceed 1 ohm.

Three phase plant.

Note. This plant requires a neutral. See Drawing WAGD8

Single phase plant.

See Drawing WAGDlO

All plant.

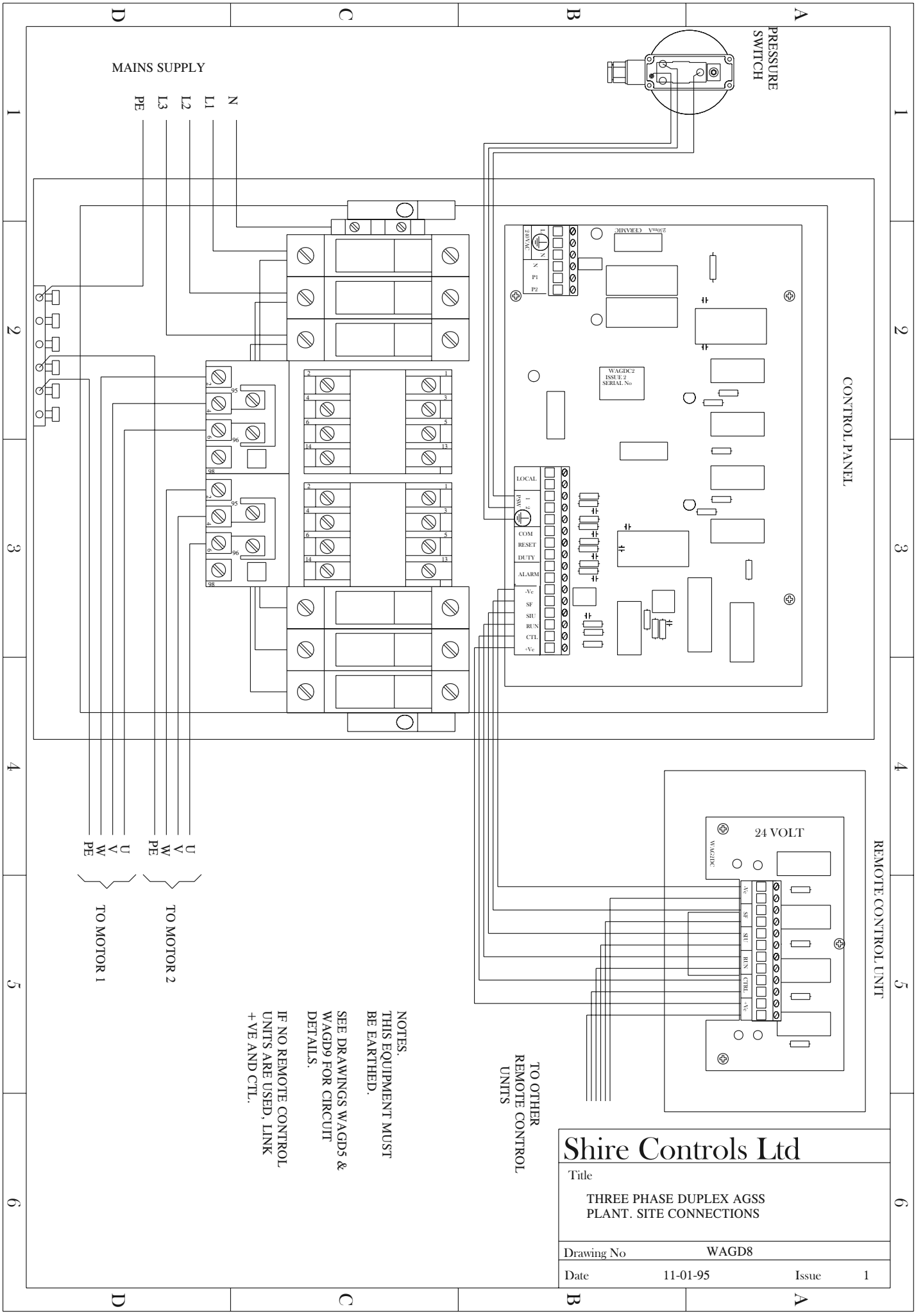
Replace fuses only with motor rated fuses, rated at the motor full load current. Do not use this plant with any control, indication or interface system other than that supplied by the manufacturers. A relay interface is available giving volt-free contacts rated at S amps, 240 volt resistive, for Power on, System on , Duty Failed 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,SIU, -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.Smm cable) Cable exceeding 2.Smm 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, Duty Failed 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.

Setting up.

Check the rotation of the motors 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 pumps are not running and that all remote control units and the control panel show a Power On lamp. Switch on the local off switch on the control panel. 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 WAGD4) 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

continued on page 11

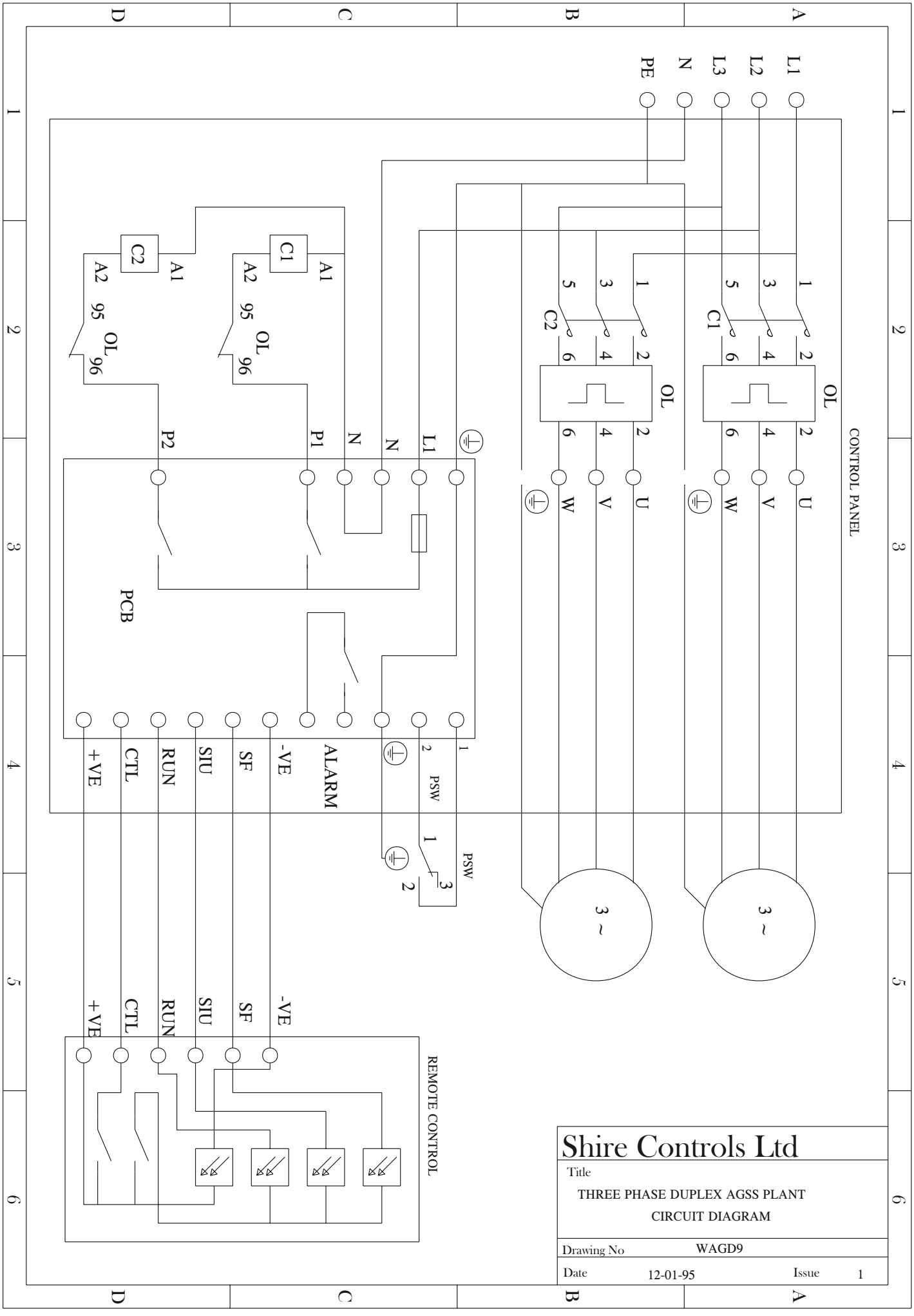


Shire Controls Ltd

Title

THREE PHASE DUPLEX AGSS PLANT. SITE CONNECTIONS

Drawing No	WAGD8		
Date	11-01-95	Issue	1



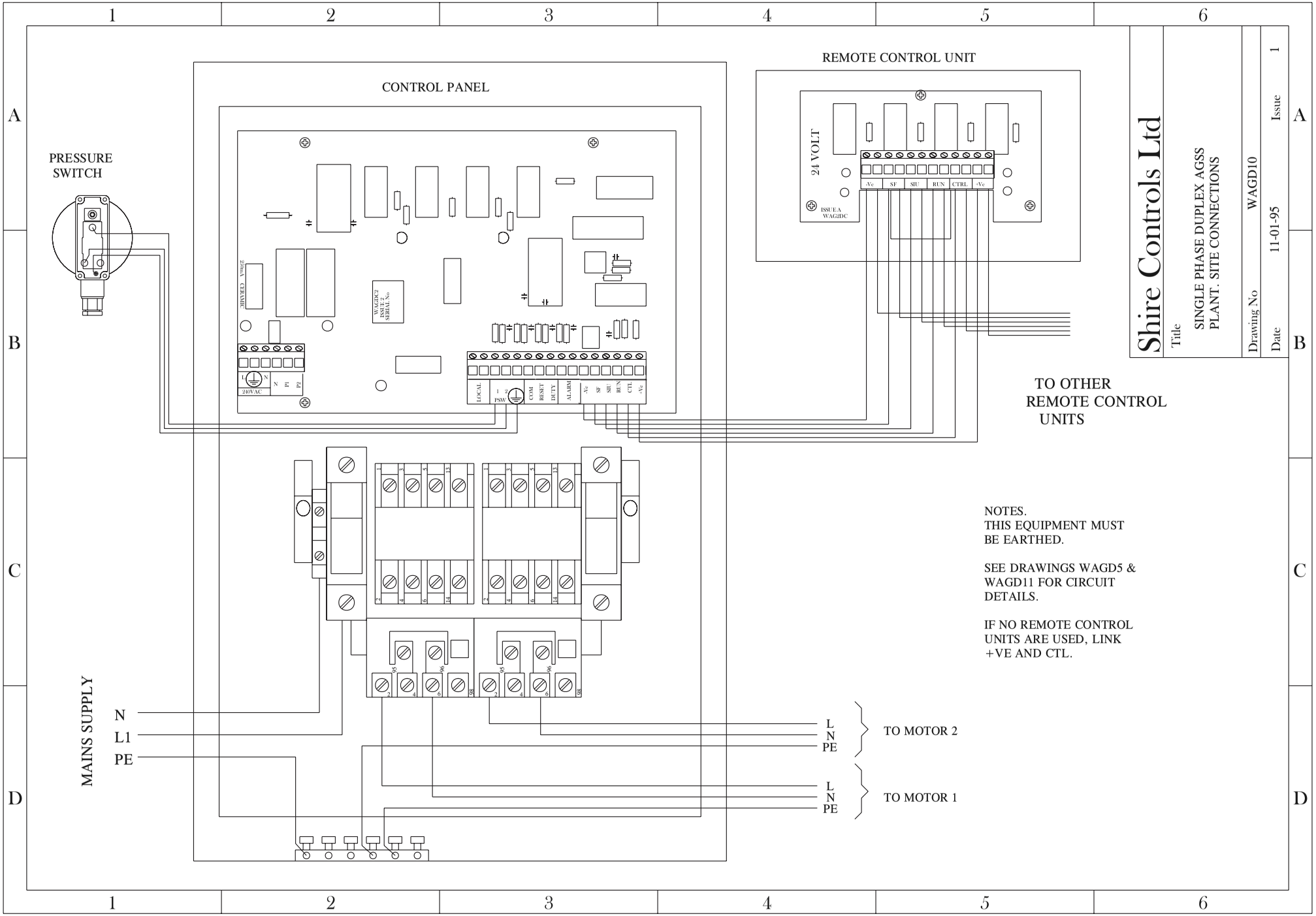
Shire Controls Ltd

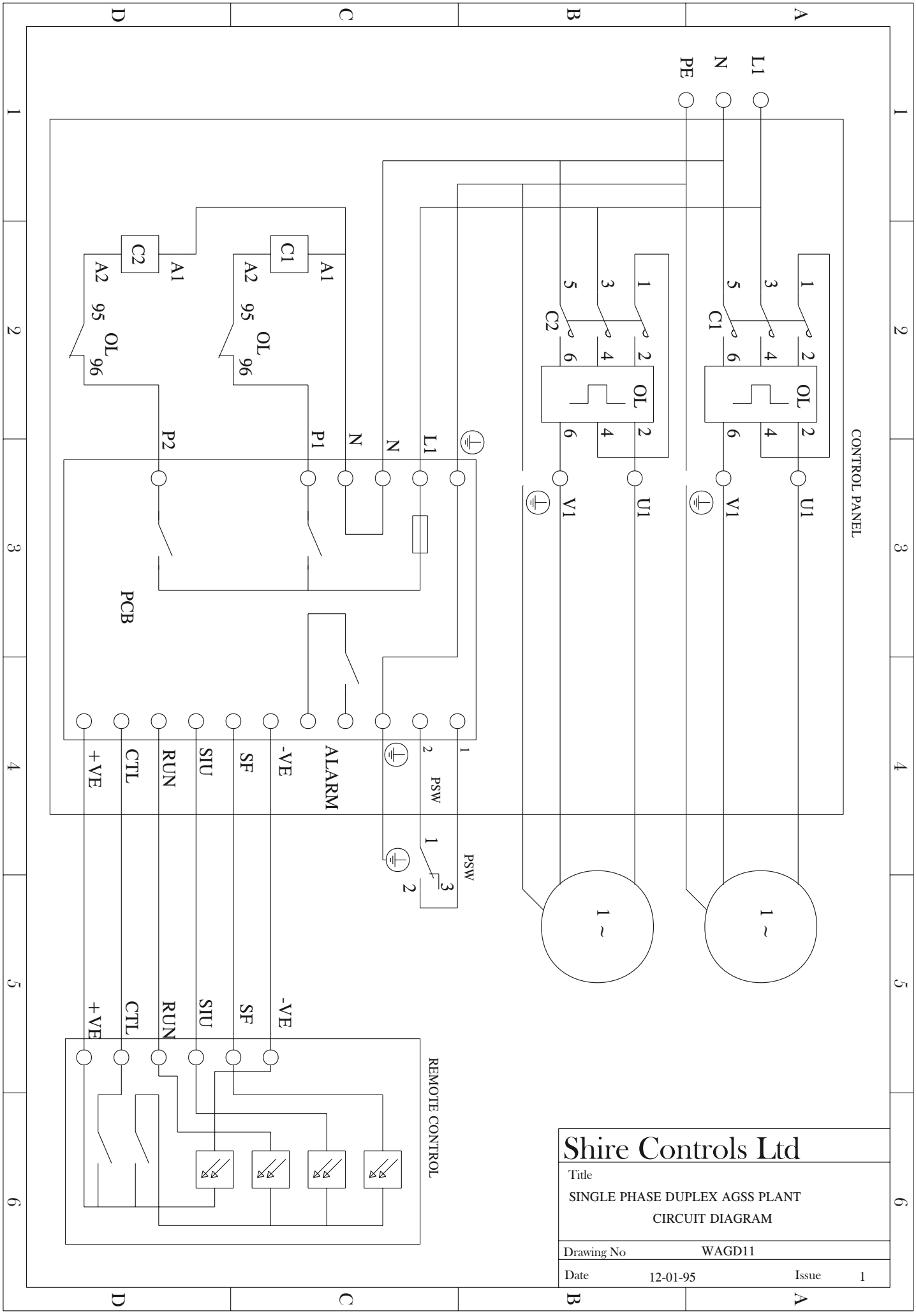
Title

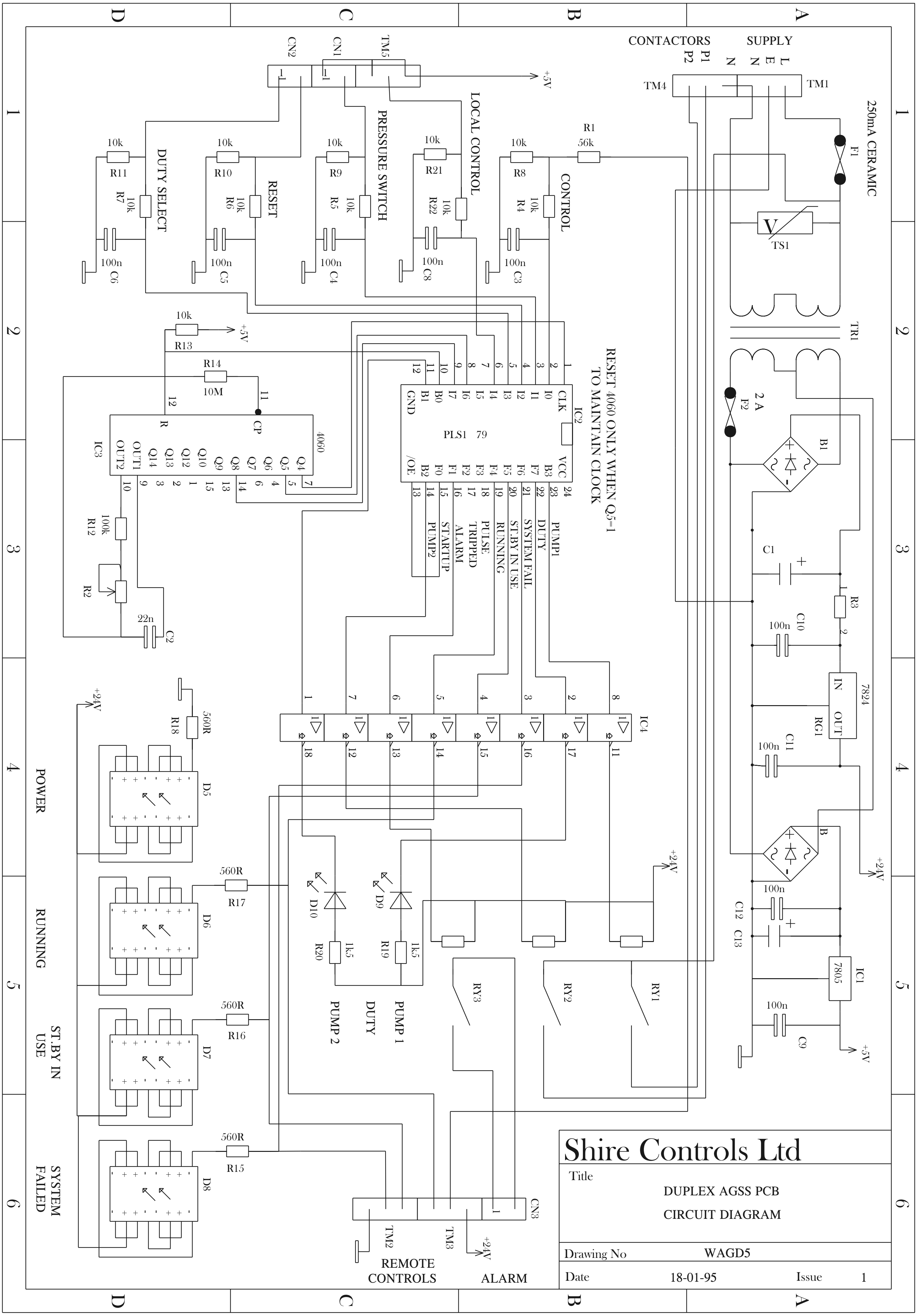
THREE PHASE DUPLEX AGSS PLANT
CIRCUIT DIAGRAM

Drawing No WAGD9

Date 12-01-95 Issue 1


1
2
3
4
5
6
A
B
C
D
CONTROL PANEL
REMOTE CONTROL UNIT
PRESSURE SWITCH
24 VOLT
-Vc
SF
SIU
RUN
CTRL
+Vc
ISSUE A
WAG2DC
LOCAL
PSW
COM
RESET
DUTY
ALARM
CTL
240VAC
TO OTHER REMOTE CONTROL UNITS
NOTES.
THIS EQUIPMENT MUST BE EARTHED.
SEE DRAWINGS WAGD5 & WAGD11 FOR CIRCUIT DETAILS.
IF NO REMOTE CONTROL UNITS ARE USED, LINK +VE AND CTL.
MAINS SUPPLY
N
L1
PE
L
N
PE
TO MOTOR 2
L
N
PE
TO MOTOR 1
Shire Controls Ltd
Title
SINGLE PHASE DUPLEX AGSS
PLANT. SITE CONNECTIONS
Drawing No
WAGD10
Issue
1
Date
11-01-95


PE
N
L1
CONTROL PANEL
C1
C2
OL
A1
A2
95
96
P1
P2
PCB
V1
U1
1 ~
PSW
ALARM
-VE
SF
SIU
RUN
CTL
+VE
REMOTE CONTROL
Shire Controls Ltd
Title
SINGLE PHASE DUPLEX AGSS PLANT
CIRCUIT DIAGRAM
Drawing No
WAGD11
Date
12-01-95
Issue
1



Shire Controls Ltd
Title
DUPLEX AGSS PCB
CIRCUIT DIAGRAM
Drawing No WAGD5
Date 18-01-95
Issue 1
CONTACTORS
SUPPLY
250mA CERAMIC
DUTY SELECT
RESET
PRESSURE SWITCH
LOCAL CONTROL
CONTROL
RESET 4060 ONLY WHEN Q5=1
TO MAINTAIN CLOCK
PLS1 79
4060
POWER
RUNNING
ST.BY IN USE
SYSTEM FAILED
PUMP 2
DUTY
PUMP 1
REMOTE CONTROLS
ALARM

a lower setting. Replace the suction hose and pressure switch cover. Disconnect the suction pipework assembly from the pipeline. Switch on a remote control unit. The duty pump should start with the System Failed lamp showing. Wait until the stand-by pump starts. Reconnect the suction pipework assembly. Go to each remote control unit in turn, switch on and check that the Duty Failed lamp is on. Reset the control panel with the reset button and check that the stand-by pump stops. Set up the system flow as described in BS 6834, using the balance valve to set the operation vacuum in the pipeline.

Operation.

Switching on any remote control unit will start the plant. Indication of system on, duty failed 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. The local off switch on the control panel will prevent the plant being started from a remote control unit if it is switched off. It will not start the plant when switched on. 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 duty pump fails to produce vacuum e.g. if the overload has tripped, demand exceeds the capacity of the pump etc., the stand-by pump will start. If the stand-by pump produces sufficient vacuum in the pipeline, the Duty Failed lamp will show, indicating that the AGSS system is functioning but may need attention. If the stand-by pump also fails to produce vacuum, the System Failed lamp will show. The time from start-up (or loss of vacuum) is adjustable between approximately 1 & 8 seconds. Turn the timer anti-clockwise to increase the time. To return to normal operation , operate the Reset button on the control panel or turn off all remote control units. To change over duty pump, operate the Duty push button on the control panel. It is not possible to change duty when a System Failed or Duty Failed condition exists. An alarm output in the form of volt-free contacts, closed under normal operating conditions, rated at 50 vdc, SOmA. These contacts will open if the power fails or the Duty Failed condition occurs.

Maintenance.

Every 6 months. Isolate the plant & remove the motor fuses to prevent the pumps starting. Switch the power back on. 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 (remember to allow enough time for the duty pump to trip when checking the first remote control). Turn off the plant & repeat for all other control positions. Next isolate the pump and replace the motor fuses for motor 1 only. Switch on the power. Start the plant and wait for it to trip. Go to each remote control unit in turn. Switch on & check that the Duty Failed lamp is on. Reset the plant. Isolate and replace the fuses for pump 2.

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