DATACON 1024

INSTRUCTION BOOK

FOR OEM

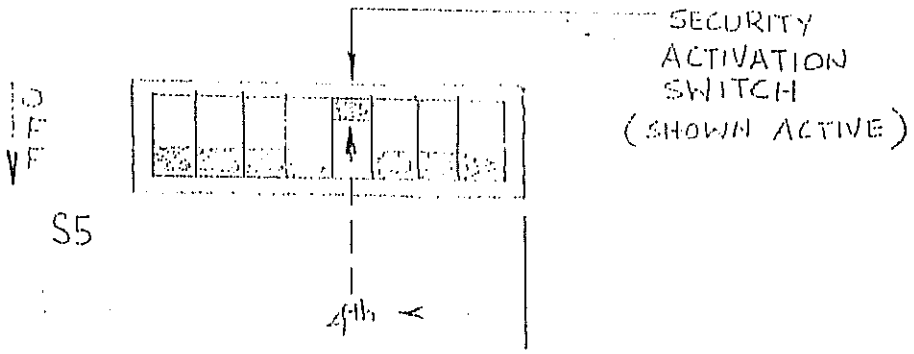
TABLE OF CONTENTS

LIST OF FIGURES

GENERAL NOTE: Switches down  are OFF, up  are ON

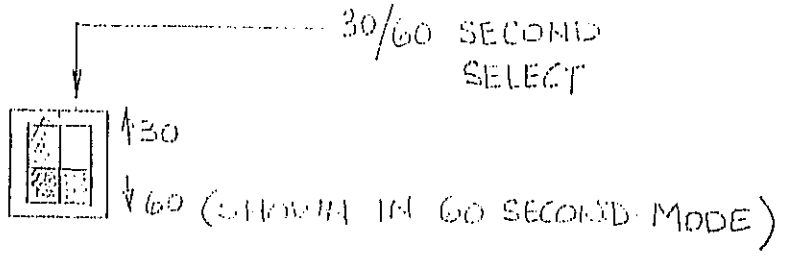
1. SECURITY SWITCH SETUP

Locate S5 on main board (upper left)(Fig. 1). The 4th switch over from the right side of the S5 switch block body is the security activation switch. Choose the position desired. See below:



2. PRINT CYCLE SELECTION

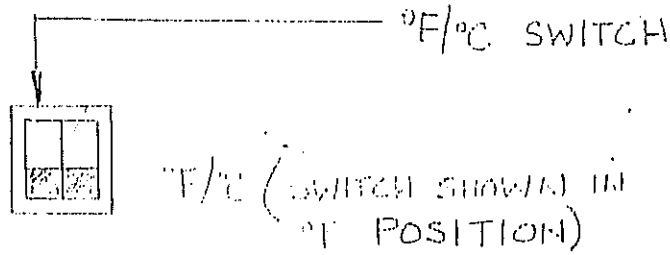
The DATACON allows for the system to print cycle parameters on a selectable 30 or 60 second basis. To select the desired Print repetition rate, first locate S2 block. Refer to Fig. 1, see below:



3. °F or °C PRINTING

The DATACON allows the temperature portion of the paper printout to be switched to indicate the mode of calibration, either °F or °C.

Locate switch block S2, refer to Fig. 1.



When the datalog printout occurs, the proper temperature units for calibration should be selected.

Units calibrated in °C should have the °F/°C switch UP ↑ ; °F units should have that switch DOWN.

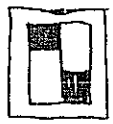
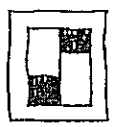
*NOTE: Switching of °F/°C print message must be done in coordination with the °F/°C mode of operation on the analog board.

4. NUMBER OF PRECONDITION CYCLES SELECTION

The DATACON units allows for 0,1,2 or 3 Precondition cycles for a DRY cycle run.

To select the number desired for the installation, locate switch block body S3, refer to Fig. 1.

Shown on the following page are the switch settings and their cycle effect for each of the precondition selects.

S3 Setting		Action
	0 cycles	Unit performs NO precondition cycles, and proceeds directly to sterilize mode.
	1 cycle	Unit pressurized chamber with steam to Pressure Limit P1*, then evacuates chamber to VACUUM Limit V1*; unit then proceeds with sterilization mode.
	2 cycles	Unit pressurizes chamber with steam to Pressure Limit P1*, then evacuates chamber to VACUUM Limit V1*, then pressurizes chamber with steam to Pressure Limit P2*, then evacuates chamber to VACUUM Limit V2*, then proceeds with sterilization mode.
	3 cycles	Unit pressurizes chamber with steam to Pressure Limit P1*, then evacuates chamber to VACUUM Limit V1*, then pressurizes chamber with steam to pressure limit P2*, then evacuates chamber to VACUUM Limit V2*, then pressurizes chamber to Final Pressure Limit P3*, and lastly evacuates chamber to final VACUUM limit V3*, then proceeds to the sterilization mode.

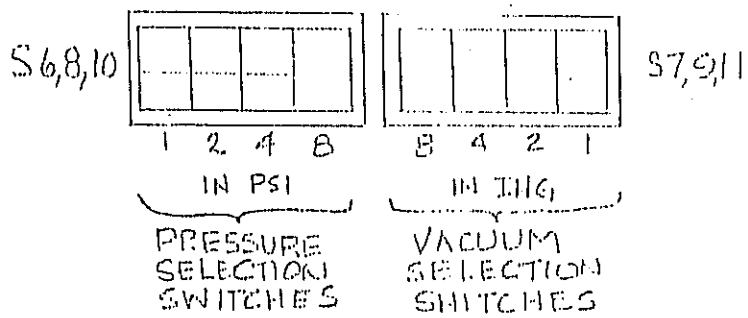
*See P1, 2, 3 & V1, 2, 3 Limit settings procedure.

5. STEAM PRESSURE/VACUUM (P1,2,3, V1,2,3) SETTINGS FOR PRECONDITION CYCLES

To set the Pressure and Vacuum Limits, it should be noted that P1, P2, P3, as well as V1, V2, and V3, are all set in the same manner, although in different physical locations. (Refer to main board drawing.)

Switch Block Body		Sets Limit
Adjacent	S6	P1
	S7	V1
Adjacent	S8	P2
	S9	V2
Adjacent	S10	P3
	S11	V3

Locate the switch block body of concern, and following the proceeding pattern.



Each select switch has assigned to it a value of PSI or IHG; 1,2,4, or 8. These switches, when activated, (UP position ↑), add their values together to yield a minimum value of zero, (all switches DOWN ↓), to a maximum value of 15, (all switches UP ↑) where 1+2+4+8=15.

To provide the proper ranges of PSI and IHG for all of the pre-conditioning cycles, base numbers have been added.

P1 and V1 limits are equal to a minimum of 5 PSI and 5 IHG respectively, added to the value of the P1 & V1 switch settings.

P2 and V2 are equal to 10 PSI/10 IHG respectively, added to the settings of the P2 & V2 switches.

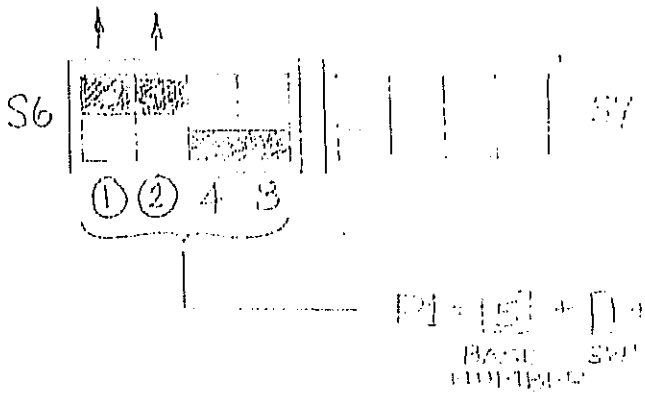
P3 and V3 are equal to 15 PSI/15 IHG respectively added to the settings of the P3 & V3 switches.

EXAMPLE:

SETTINGS FOR 3 PRECONDITION CYCLES

cycle #1	Pressure Limit	P1=8 PSI
	Vacuum Limit	V1=9 IHG
cycle #2	Pressure Limit	P2=14 PSI
	Vacuum Limit	V2=20 IHG
cycle #3	Pressure Limit	P3=21 PSI
	Vacuum Limit	V3=28 IHG

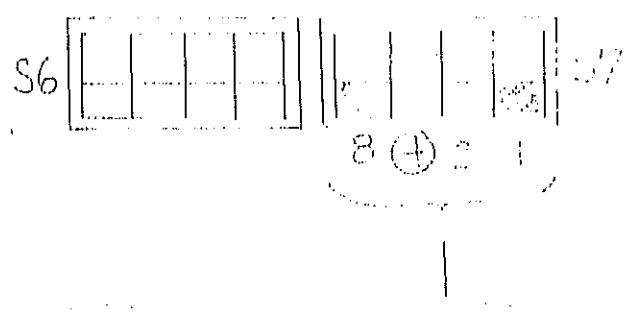
To set P1 to 8 PSI, (locate P1 set switches, S6)



P1 [5] + [3] = 8 PSI

BASE SWITCHES

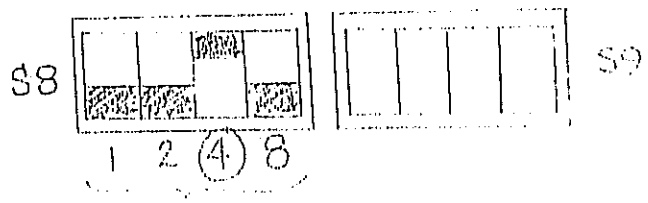
To set V1 to 9 IHG, (locate V1 set switches, S7)



V1 [5] + [4] = 9 IHG

BASE SWITCHES

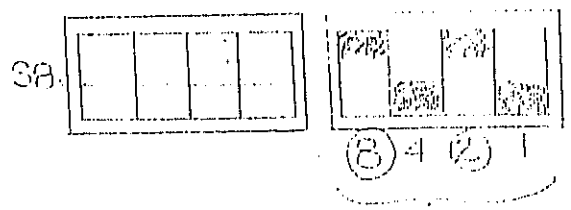
To Set P2 = 14 PSI; locate S8



P2 = [10] + [4] = 14 PSI

BASE NUMBER — SWITCHES

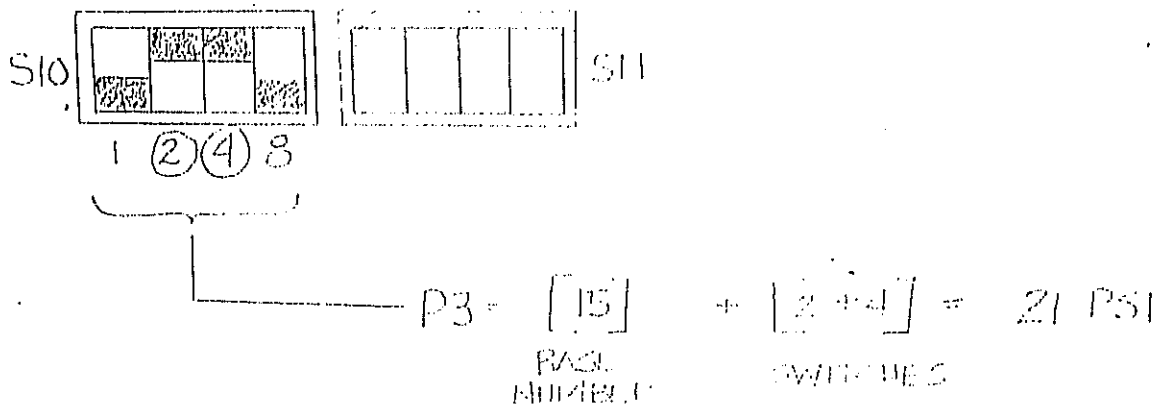
To Set V2 = 20 IGH; locate S9



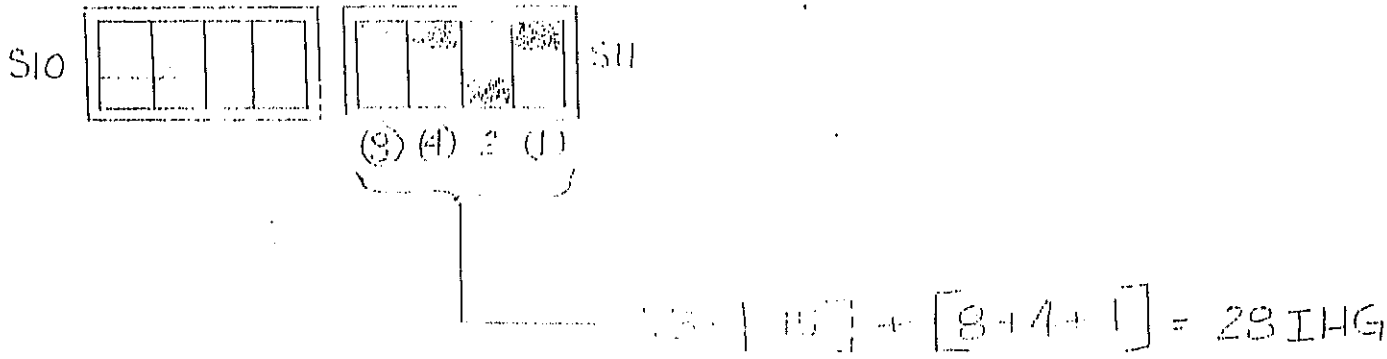
V2 = [10] + [10] = 20 IHG

BASE NUMBER — SWITCHES

To Set P3 = 21 PSI; locate S10



To Set V3 = 28 IHG; locate S11



Following these steps should enable the service technician to set up example settings.

6. TEMPERATURE CONTROL POINT SETTINGS

The DATACON computer controls the chamber temperature through the activation and de-activation of the steam valve.

The set points at which the computer system will energize and de-energize the steam valve are selectable by the service tech to compensate for the variations and the system differences that can occur from unit to unit.

The primary concern is the Set point temperature, TØ, the temperature set via the Key pad.

The computer will control chamber temperature via the following curve:

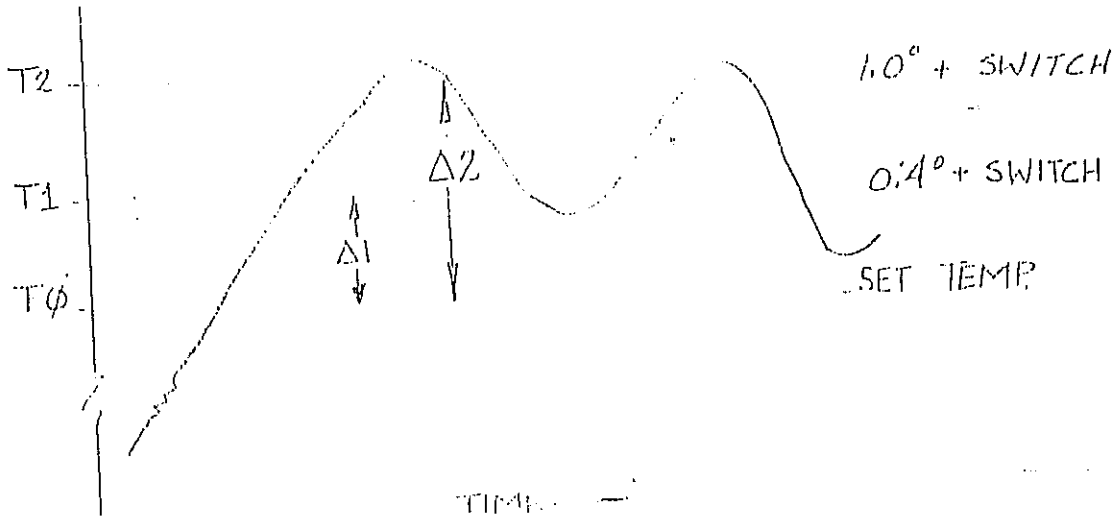


FIG 3

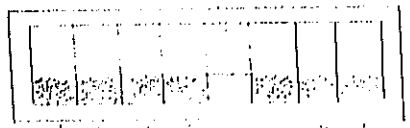
The computer system will attempt to control the chamber temp at the minimum level of T1, which can be seen on the graph above, (Fig.3) is .4° above TØ.

On the high end, the computer will control around the level of T2, seen on the graph (Fig.3) above as 1° above TØ.

Depending on chamber size, load site and type, steam supply and other variables, T1 and T2 will vary, and can be set as follows:

T1 is ALWAYS .4° + Lower Control point switch setting ABOVE TØ
T2 is ALWAYS 1.0° + Lower Control point switch setting ABOVE TØ

To Set T1, T2; Locate S5, (Refer to Main Board Drawing) Fig. 1.

S5 

UPPER CONTROL POINT SWITCHES — LOWER CONTROL POINT SWITCHES

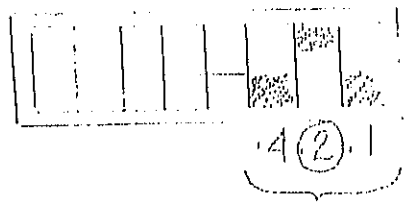
Each switch has a value assigned to it, .1, .2, .4, or .8. As each switch is activated (pushed UP ↑), its value is added to the minimum values to T1 and T2.

Example settings:

Sterilization setpoint temperature = 250.0°F
Lower Control point = 250.6; Δ1= .6°
Upper Control point = 251.7; Δ2= 1.7°

I) To set Lower Control point, determine the value of Δ1 , as defined as T1 - TØ; therefore for this example Δ1 is:
250.6 - 250.0 = .6°

Since T1 always starts at .4° above TØ, the difference of .2° must be made up by the lower control point switches; as follows:

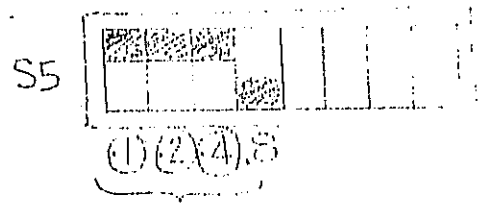
S5 

T1: TØ + 0.4° + 0.2° = 250.6°
START OFFSET — LCP SWITCHES

II) To set the Upper Control point, determine the value of $\Delta 2$, as defined in Fig. 3.

2 is defined as T2-T$\emptyset$; therefore for this example,
$2 = 251.7^{\circ} - 250.0^{\circ} = 1.7^{\circ}$

Since T2 ALWAYS starts at 1.0° above T$\emptyset$, the difference of $.7^{\circ}$ must be made up by the upper control point switches; as follows: Locate Switch Body S5



T2 = T$\emptyset$ + 1.0 + [.1 + .2 + .4] = 251.7°

START OFFSET

UCP SWITCHES

CALIBRATION MODE/PROCEDURE

The DATACON unit provides a mode for calibration so the unit may be adjusted in temperature and pressure while it is in idle; (not running a sterilization cycle).

The calibration mode may be invoked by Service personnel when the rear cover is removed and the Calibration switch is depressed; (hold in for 1/2 second, then release).

When the calibration mode is invoked, the CONDENSATE relay will close and remain energized throughout the Calibration cycle. (J16 pin 8 (power Hot) places AC power on J16pin5)

By front panel manipulation, the FAST EXHAUST VALVE, STEAM VALVE, AND VACUUM PUMP may be energized in any combination desired.

1. Depressing the Front panel FAST CYCLE select button, independent of anything else, will energize the FAST EXHAUST valve relay.

2. Depressing the front panel FLUID CYCLE select button, independent of anything else, will energize the STEAM valve relay.

3. Depressing the front panel DRY CYCLE select button, independent of anything else, will energize the VACUUM pump relay.

   Depressing the CANCEL/ABORT button will DE-ENERGIZE all relays EXCEPT the condensate.

Use of the independent controls of the FAST EXHAUST, STEAM VALVE, and VACUUM VALVES, are for the expressed purpose of conditioning the Chamber to a known state for calibrating temperature and pressure.

Depressing any FAST, DRY, or FLUID cycle selects,(to energize any valve) will automatically switch the front panel display to show chamber pressure.

Chamber temperature will be displayed only when the DISPLAY TEMP. button is depressed.

The front panel display may be toggled from displaying temperature or pressure at any time in the calibration mode by the DISPLAY TEMP and DISPLAY PRESS. buttons.

CALIBRATION: (Refer to Fig. 2)

1. PRESSURE ADJUSTMENT

With chamber pressure at room ambient, the adjustment potentiometer labled PRESSURE ZERO should be used to correct the display for 00.00 PSI/IHG.

NOTE: Hysterysis, (the built-in tendency to toggle between PSI and IHG), will prevent, in most cases, the setting of the pressure reading to 00.00. A limit of 00.05 PSI to 00.05 IHG can be accepted as a good room ambient.

By using the front panel control of the STEAM valve, the chamber pressure should be brought to a pre-determined calibration value, (via a calibration gauge).

The adjustment potentiometer labled PSI ADJ. should be used to correct the display to the calibrated valve. Front panel control of the FAST EXHAUST valve can be used to vent the chamber back to room ambient. Due to slight interdependence between zero and span adjusts, several room to full scale adjustment cycles may be necessary to correct the slope linearity and repeatability. Front panel control of the VACUUM pump can cause the chamber to be evacuated to a calibrated vacuum level, (via a calibration gauge).

The adjustment potentiometer labled IHG ADJ. should be used to correct the display to the calibrated valve.

*NOTE: It is recommended that the STEAM valve be used to break vacuum so that no foreign unclean debris can be accidently pulled into the chamber from the FAST EXHAUST line should that line be used to break the chamber vacuum.

Several room to deep vacuum adjustment cycles may be necessary due to zero and span interdependance as in the room to pressure

2. TEMPERATURE ADJ.

Zero adj. and full scale adjusts (see Fig. 2) will allow the service tech. to correct the temperature readings for the calibrated pressures attained during the pressure calibration procedure previously described.

CALIBRATION PROCEDURE STEP BY STEP

A. At room ambient set pressure to 00.00± .05 using the pressure zero adj. and set the temp to approximately room level with the temp zero adj.

B. Energize steam valve, bring chamber pressure to calibration level.

C. Set pressure display to calibration gauge using pressure full scale adj.

D. Set temp display to chamber test thermocouple level using temp full scale adj.

E. Using the FAST EXHAUST valve, vent the chamber back to room ambient pressure and test for repeatable zero level. Readjust zero and repeat cycle steam A thru E if necessary.

F. Using Vacuum pump, (or ejector), evacuate the chamber to calibrated vacuum level.

G. Set Vacuum display to calibration gauge using IHG full scale adj.

H. Break Vacuum with steam until room ambient pressure is present in the chamber, and upon shutting off the steam, energize the fast exhaust valve to equalize pressures of chamber to atmosphere.

I. Check room ambient pressure reading for zero level once again. Readjust zero and repeat steps F thru I of necessary.

NOTE: DO NOT ADJUST A/D CONVERTOR ZERO AT ANY TIME: THIS IS A FACTORY ADJUSTMENT.

CONTROL OUTPUTS (RELAYS CONTACTS)

16 pin chassis connector (CABLE 1)

PIN	CONTROLS	WIRE COLOR CODE
1	Steam Valve	Red/Blk
2	Vacuum Pump	Blue
3	Air Breaker	Orange
4	Fast Exhaust	Red/yellow
5	Condensate Valve	Brown
6	Slow Exhaust	Red Green
7	(Spare)	White
8	Common Switch Leg	Black
15-16	115 Vac Power to Datacon	Yellow Lavender

CONTROL INPUTS

37 pin chassis connector (CABLE 2)

PIN	INPUT	WIRE COLOR CODE
1	Common Analog ground	Black
2	RTD (Red Lead)	Red
3	Pressure Transducer Supply Volts	Orange
4	Pressure Transducer Signal	White
9, 15	Door Interlock	Blue/Green
23	Digital Gnd	
29-37	Printer Bus	

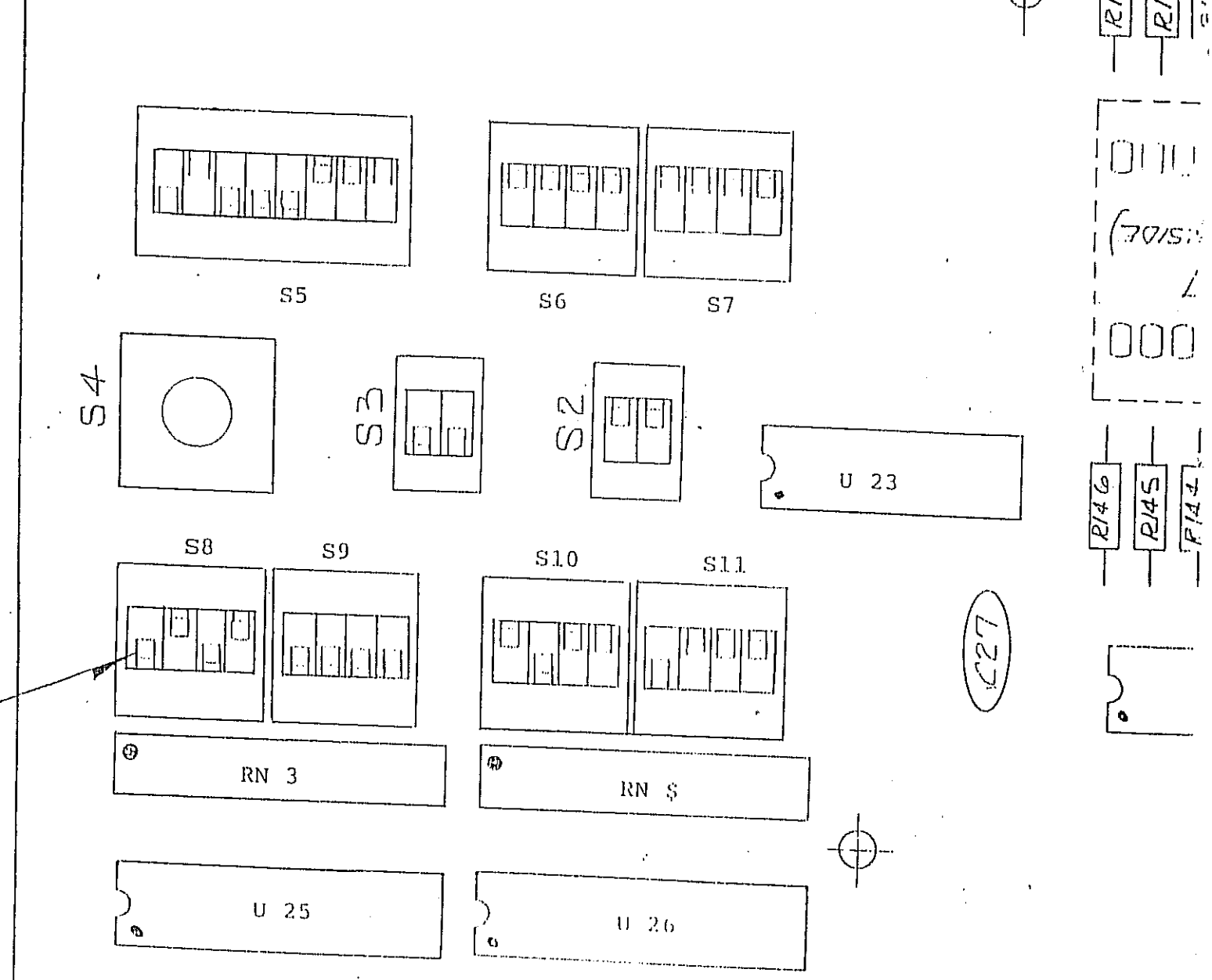
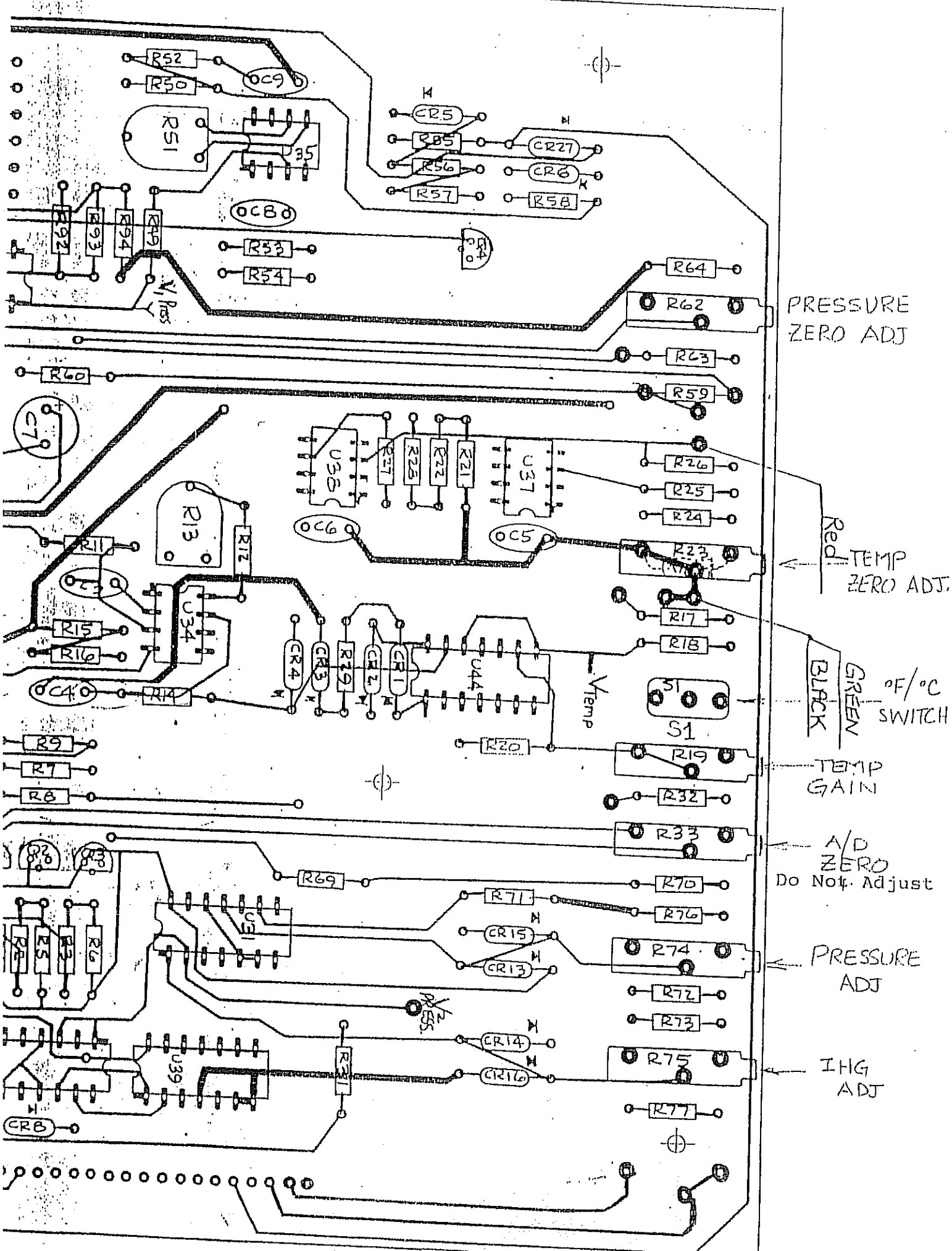

S5
S6
S7
S4
S3
S2
U 23
S8
S9
S10
S11
RN 3
RN $
U 25
U 26
C27
R146
R145
DOOR

FIGURE 1


R52
R50
OC9
R51
35
CR5
R55
R56
R57
CR27
CR6
R58
OC8
R92
R93
R94
R95
R53
R54
R64
R62
PRESSURE ZERO ADJ
R63
R60
R59
C7
U35
R27
R26
R22
R21
U37
R26
R25
R24
OC6
OC5
R23
Red
TEMP ZERO ADJ.
R13
R12
R11
C3
U34
R15
R16
OC4
R14
CR4
CR3
R29
CR2
CR1
U44
R17
R18
VTemp
S1
BLACK
GREEN
°F/°C SWITCH
R9
R7
R8
R20
R19
TEMP GAIN
R32
R33
A/D ZERO
Do Not Adjust
R69
R70
R71
R76
C11
R4
R5
R3
R6
CR15
CR13
R74
PRESSURE ADJ
R72
R73
R75
IHG ADJ
R77
CR14
CR16
U39
CR8