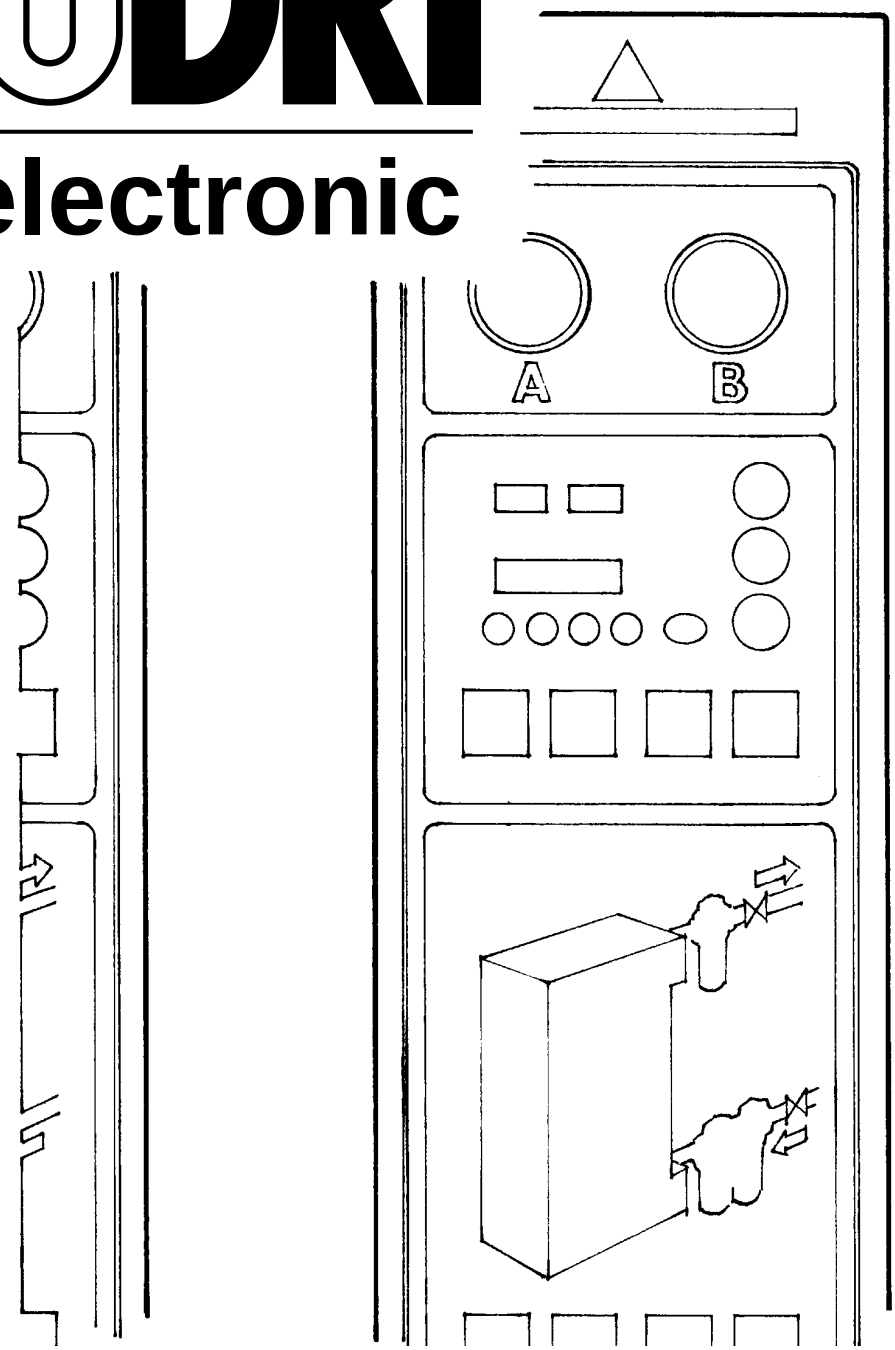
compressed air dryer

domnick hunter

PNEUDRI

electronic



CE

Service & Maintenance Manual V3.5

CONTENTS

1. INTRODUCTION

N.B. This manual is intended for use by dh authorised service agents ONLY.

This manual details the menu structure of the **PROTECTED DATA MENU**, describes how to install **OPTIONAL EXTRAS**, details how to **FAULT FIND** and carryout **HARDWARE MAINTENANCE**, and information on how to **RETROFIT TO EXISTING PRODUCT**.

This manual should be regarded as being an addendum to the Operating & Maintenance Instruction Manual, and should be read in conjunction with said manual.

2. COMMISSIONING PROCEDURE

A **PNEUDRI electronic** dryer can not be cycled until it has been commissioned by a **domnick hunter approved service agent.**

The following section details the **recommended** commissioning procedure, proceed as follows:-

N.B. It is assumed that the dryer has been connected to, but is isolated from the compressed air system and electricity supply.

IF DPL'S ARE FITTED, DISREGARD THE FOLLOWING INSTRUCTIONS.

1) Connect the pre-filtration and after-filtration D.P.E.s to the terminal box on the inlet assembly. Connect as per schematic.

a) Route each of the 3 x 2-core cables to the relevant D.P.E., the cable terminations are identified as follows :-

	24v	Return
pre-filter 1	6	3
pre-filter 2	7	4
after-filter;	8	5

b) Cut the cable to the required length and bare ends;

c) Remove insert from the top of the D.P.E. and drill a hole in the insert, a drill location indent can be found on the underside of the insert;

d) Pass the cable through the hole in the insert using a suitable grommet;

N.B. It may be necessary to fit the sensor to the D.P.E. before proceeding further.

e) Connect the cable to the flying leads using a 2 way terminal block;

f) Replace the D.P.E. insert.

g) If D.P.L are fitted, it is not necessary to wire up the pre-filters.

3) Switch on electricity supply to the dryer, the **POWER ON LED** should illuminate.

4) Step through the menu structure to the **UNITS/LANG**uage/**RESET MENU** entry prompt and access the UNITS/LANG/RESET MENU, step through this menu to the **CLOCK RESET MENU** entry prompt and access the CLOCK RESET MENU, step through this menu altering the real time accordingly, return to the **SYSTEM STATUS DISPLAY** when this procedure is complete.

Reference:- see Operating And Maintenance Instruction Manual.

5) Return to the **SYSTEM STATUS DISPLAY**.

6) Step through the menu structure to the **PROTECTED DATA MENU** entry prompt and access the PROTECTED DATA MENU.

Reference:- see ACCESSING THE PROTECTED DATA MENU, section 3.02.

7) Proceed to the **DRYER CONFIG**uration **MENU** entry prompt and access the DRYER CONFIG MENU, step through this menu altering the default values accordingly, return to PROTECTED DATA MENU header when data entry is complete.

Reference:- see DRYER CONFIG MENU, section 3.04.01.

8) Proceed to the **SIZING DATA MENU** entry prompt and access the SIZING DATA MENU, step through this menu altering the default values accordingly, return to PROTECTED DATA MENU header when data entry is complete.

Reference:- see SIZING DATA MENU, section 3.04.02.

9) Proceed to the **ALARM SETTINGS MENU** entry prompt and access the ALARM SETTINGS MENU, step through this menu altering the default values accordingly, return to PROTECTED DATA MENU header when data entry is complete

Reference:- see DRYER CONFIG MENU, section 3.04.03.

10) Proceed to the **COUNTDOWN TIMERS MENU** entry prompt and access the COUNTDOWN TIMERS MENU, step through the 2 “sub”-menus located within this menu, namely NEXT SERVICE MENU and NEXT SILENCERS MENU, and alter the default dates for the next service and next silencer change respectively, return to PROTECTED DATA MENU header when data entry is complete

Reference:- see COUNTDOWN TIMERS MENU, section 3.04.04,
see NEXT SERVICE MENU, section 3.04.04a,
see NEXT SILENCERS MENU, section 3.04.04b.

11) If the dryer is being commissioned because the **PNEUDRI electronic** controller has been replaced, proceed to the **ONLINE TIMERS MENU** entry prompt and access the ONLINE TIMERS MENU, step through this menu altering the default values to the values recorded by the previous controller, return to PROTECTED DATA MENU header when data entry is complete.

Reference:- see ONLINE TIMERS MENU, section 3.04.05.

If not then go directly to step 12).

12) Proceed to the **CONFIGURE INPUTS MENU** entry prompt and access the CONFIGURE INPUTS MENU, step through this menu to the **CALI**brate **ANALOG INPUTS MENU** entry prompt and access the CALI ANALOG I/Ps MENU and zero the P.offset accordingly, return to PROTECTED DATA MENU header when this procedure is complete.

Reference:- see CONFIGURE INPUTS MENU, section 3.04.08,
see CALI ANALOG INPUTS MENU, section 3.04.08a.

13) Exit the PROTECTED DATA MENU.

Proceed to the **BRING ONLINE MENU** entry prompt and access the OVER-RIDE FUNCTs MENU, step through this menu and **DISABLE** the **LOCK** item.

The dryer is now ready to bring online, step through the menu structure to the **BRING ONLINE INSTRUCTIONS** entry prompt and access the BRING ON LINE INSTRUCTIONS, step through this set of instructions carrying out the instructions and acknowledging the instructions as having been carried out.

BRING ONLINE INSTRUCTIONS

When the menu prompt says I/L valve open (Y/N), allow pressure to build up in the dryer slowly before proceeding.

Reference:- see Operating And Maintenance Instruction Manual.

N.B. If the pipework downstream of the dryer is depressurized, then DO NOT open the outlet isolation ball valve fully, this will enable the pressure to build up gradually downstream of the dryer once cycling commences without sacrificing the pressure upstream of the dryer.

Press the green **START** Key to start the dryer cycling.

3. PROTECTED DATA MENU

3.01 PROTECTED DATA FLOW DIAGRAM

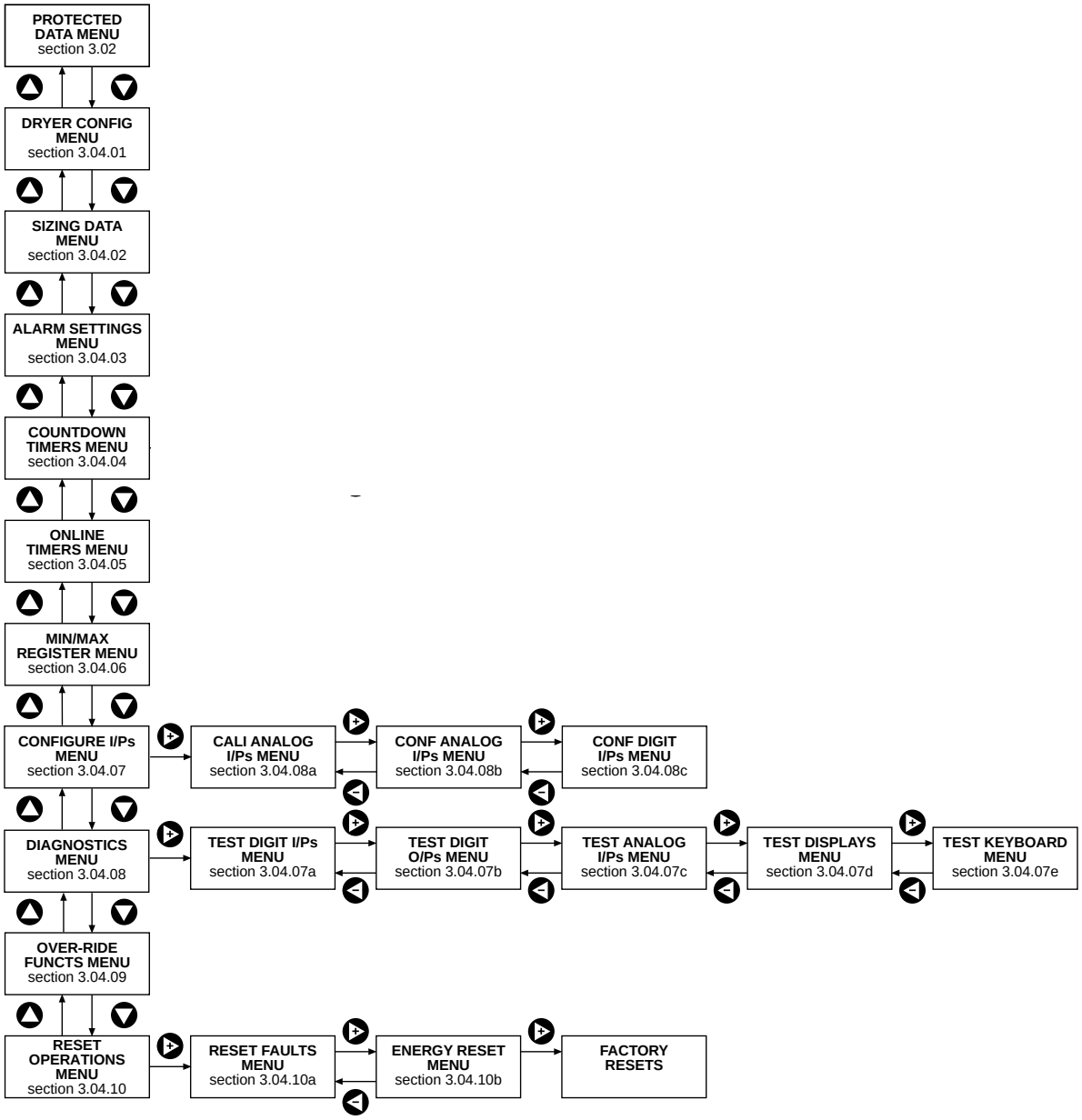
3.02 ACCESSING THE PROTECTED DATA MENU

By accessing the **PROTECTED DATA MENU** an operator is able to modify the **DRYER CONFIGURATION**, carryout **DIAGNOSTIC OPERATIONS** and perform **RESET OPERATIONS**, via 10 sub-menus.

N.B. This menu is **PASSWORD PROTECTED** to prevent inadvertent changes being implemented by individuals who are unfamiliar with their consequences.

3. PROTECTED DATA MENU

3.01 PROTECTED DATA FLOW DIAGRAM



***1 PROTECTED DATA MENU**
section 3.02

***2 DRYER CONFIG MENU**
section 3.04.01

***3 SIZING DATA MENU**
section 3.04.02

***4 ALARM SETTINGS MENU**
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***5 COUNTDOWN TIMERS MENU**
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***19 CALI ANALOG I/Ps MENU**
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section 3.04.10a

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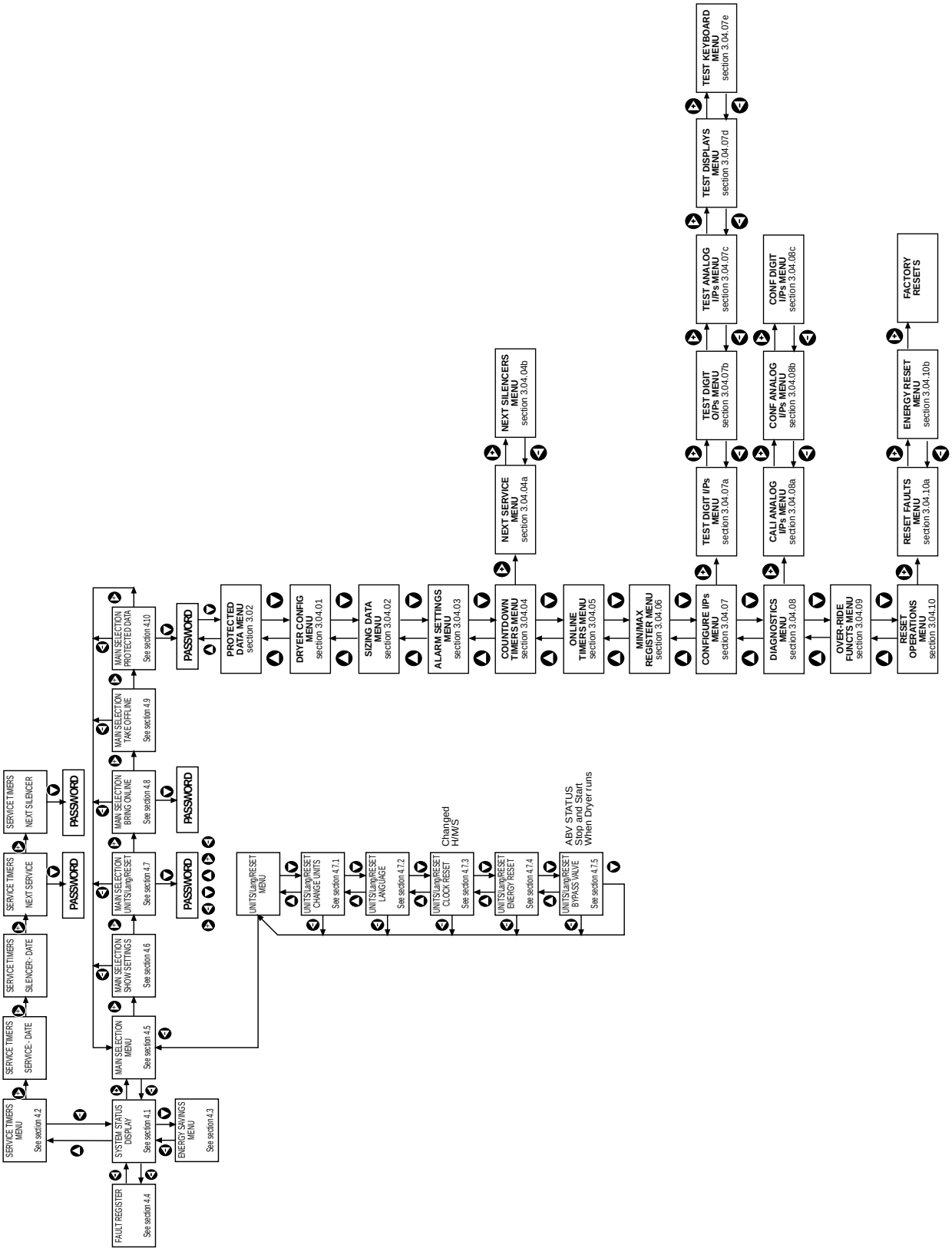
section 3.04.10b

COMPLETE MENU STRUCTURE



3.02 ACCESSING THE PROTECTED DATA MENU

By accessing the **PROTECTED DATA MENU** an operator is able to modify the **DRYER CONFIGURATION**, carry out DIAGNOSTIC OPERATIONS and perform **RESET OPERATIONS**, via 10 sub-menus.

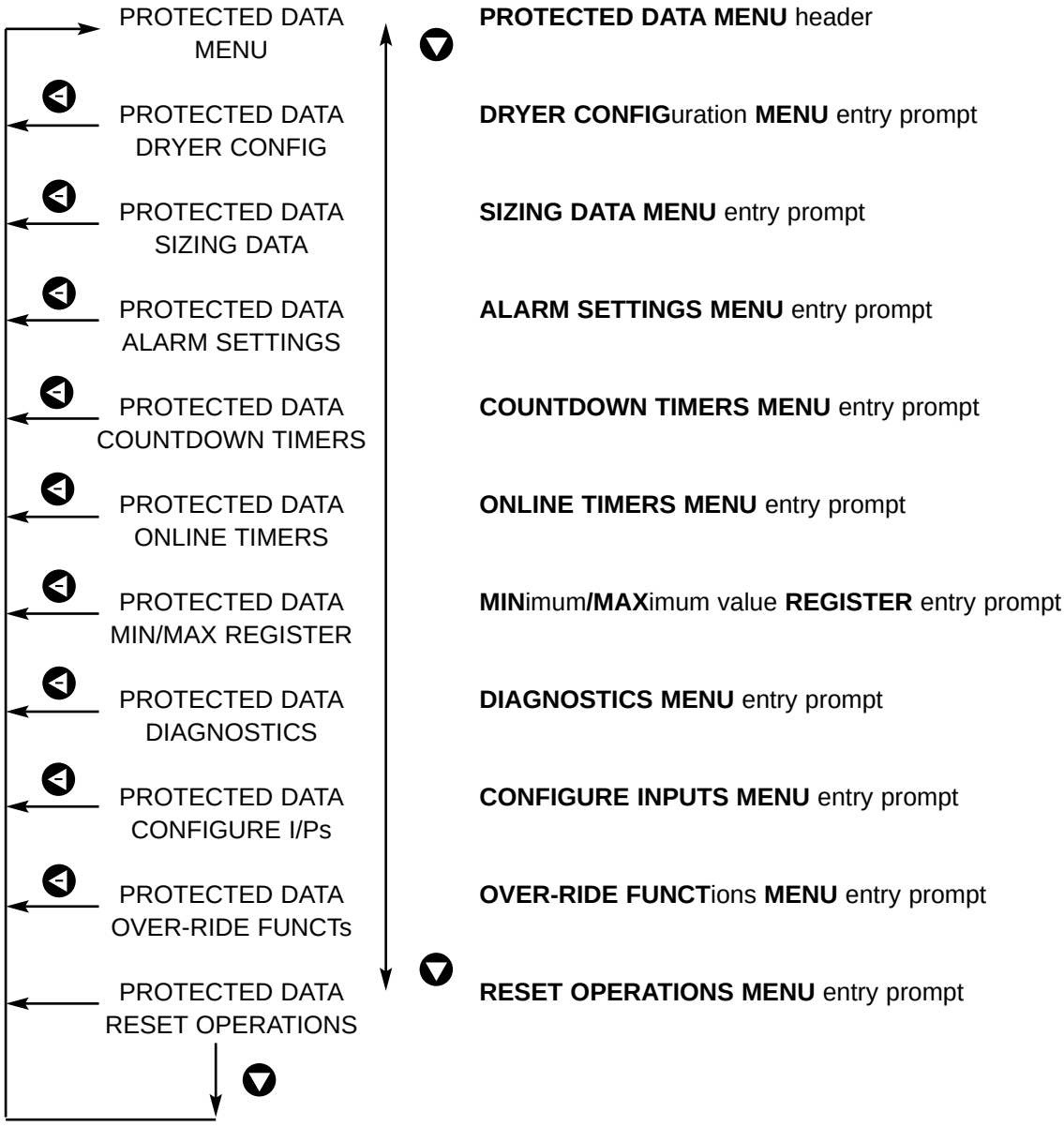
N.B. This menu is **PASSWORD PROTECTED** to prevent inadvertent changes being implemented by individuals who are unfamiliar with their cinsequences.

To enter the PROTECTED DATA MENU proceed as below:-

Step no.	Key Press	Alphanumeric Display Text	Comments
1		MAIN SELECTION PROTECTED DATA	go to the **PROTECTED DATA MENU** entry prompt
2	▼	PROTECTED DATA ENTER CODE ??????	the **PASSWORD ENTRY PROMPT** is displayed
3	▶	PROTECTED DATA ENTER CODE *?????	The 1st character of the access code is ▶
4	▼	PROTECTED DATA ENTER CODE **????	The 2nd character of the access code is ▼
5	▲	PROTECTED DATA ENTER CODE ***???	The 3rd character of the access code is ▲
6	◀	PROTECTED DATA ENTER CODE ****??	The 4th character of the access code is ◀
7	▶	PROTECTED DATA ENTER CODE *****?	The 5th character of the access code is ▶
8	◀	PROTECTED DATA MENU	The 6th character of the access code is ◀ This is the **PROTECTED DATA MENU** header

3.03 PROTECTED DATA MENU STRUCTURE

The menu structure is detailed below:-



To Change a default value in any menu:-

Press the Enter button . The value will start to flash. Pressing Plus or Minus will alter the value. Press Enter to acknowledge the new value.

3.04 INDIVIDUAL MENUS

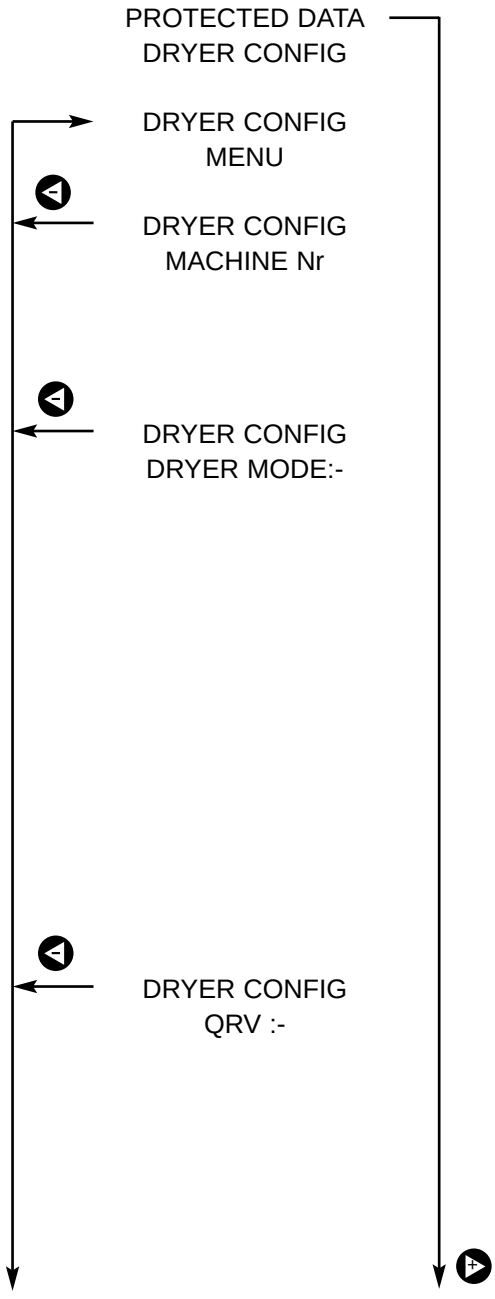
The following sections detail how to enter individual “sub”- menus within the **PROTECTED DATA MENU**, how to locate a particular variable within a given “sub”- menu, and give details of the options and defaults available for each variable.

3.04.01 DRYER CONFIG MENU - VARIABLE

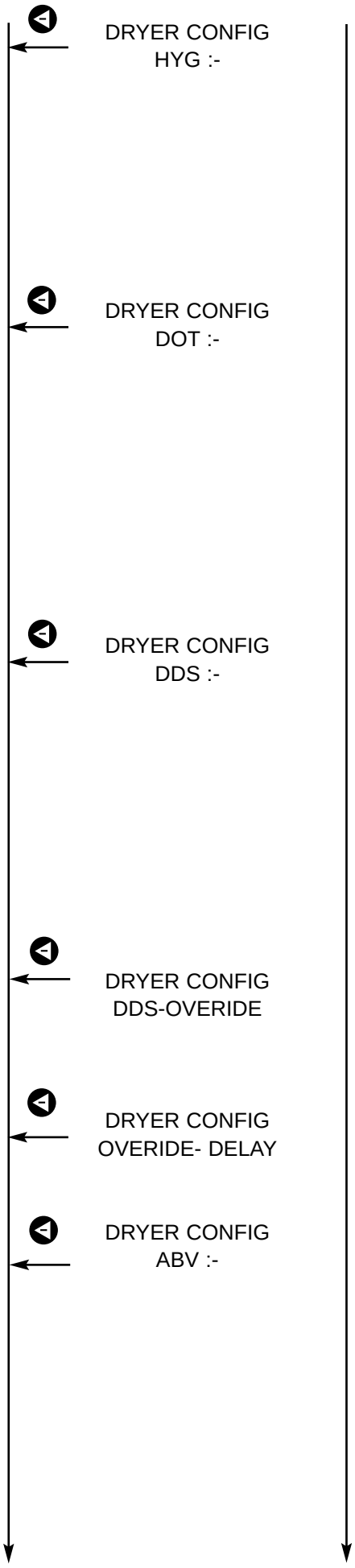
The **DRYER CONFIG**uration **MENU** is the means by which the operator changes the **MODES OF OPERATION** of the dryer.

N.B. THIS MENU CAN NOT BE ACCESSED WHILST THE DRYER IS CYCLING!!!

The menu structure is detailed below:-



Alphanumeric Display Text and Key Presses	Comments
PROTECTED DATA DRYER CONFIG	**DRYER CONFIG**uration **MENU** entry prompt
DRYER CONFIG MENU	**DRYER CONFIG MENU** header
DRYER CONFIG MACHINE Nr	the **MACHINE NUMBER** is used to uniquely identify a dryer when communicating with a bank of dryers via their RS485 ports. **Options:-** 1 to 255 **Default:-** 1
DRYER CONFIG DRYER MODE:-	the **DRYER MODE** determines mode of operation of the dryer. **Options:-** HEAT REGENERATIVE (H/R), HEATLESS (H/L) **Default:-** **H/R** **N.B.** if the **DRYER MODE** of the dryer is changed from that for which it was initially supplied to operate in, then modifications to dryer hardware and purge flow will be required. **N.B.** the dryer may automatically revert from a H/R to a H/L cycle if a contactor fault is detected.
DRYER CONFIG QRV :-	determines if a **Q**uick **R**epressurisation **V**alve is to be actuated by the dryer when **DRYER MODE** is H/L. **Options:-** FITTED, NOT FITTED **Default:-** **NOT FITTED** **N.B.** the QRV and the HEATER CONTACTOR A share the same digital output, therefore a QRV can not be actuated by a dryer configured for a H/R cycle.



DRYER CONFIG
HYG :-

the dryer can be configured to accept an analogue input from an integral **HYG**rometer.

Options:- FITTED
NOT FITTED

Default:- **DISABLED**

N.B. if an **HYG** is **FITTED** then the outlet dewpoint is displayed in the **ENERGY SAVINGS MENU**.

DRYER CONFIG
DOT :-

the hygrometer sensor **DOT COLOUR** must be entered, this is to ensure that the conversion from voltage to dew-point is performed correctly.

Options:- 6.0 - BLACK DOT
6.1 - BROWN DOT
6.2 - RED DOT
6.3 - ORANGE DOT

Default:- **LINEAR**

N.B. the **DOT COLOUR** is shown on the flats of the sensor

DRYER CONFIG
DDS :-

Dewpoint **D**ependent **S**witching is available if an **HYG** is **FITTED** without the need for additional hardware modifications.

Options:- ACTIVATED,
DISABLED

Default:- **ACTIVATED**

N.B. the dryer will automatically suspend DDS if a hygrometer sensor fault is detected. This prevents the desiccant bed becoming saturated.

DRYER CONFIG
DDS-OVERIDE

Options:- ACTIVATED,
DISABLED

Default:- **DISABLED**

DRYER CONFIG
OVERIDE- DELAY

Default:- **30 MINS**

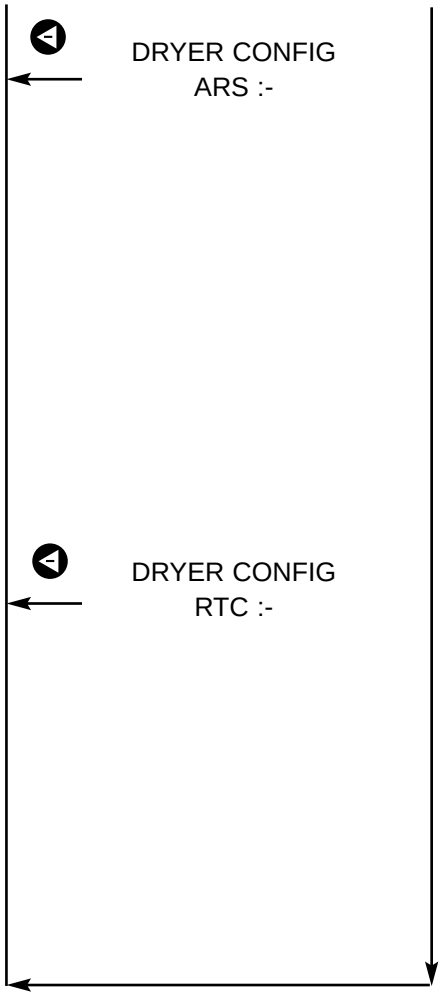
DRYER CONFIG
ABV :-

determines if an **A**utomatic **B**ypass **V**alve is to be actuated by the dryer when a **FAULT SHUTDOWN** event occurs.

Options:- FITTED,
NOT FITTED

Default:- **NOT FITTED**

N.B. if an **ABV** is **FITTED**, and is identified as being so, then it will be actuated if a **FAULT SHUTDOWN** occurs and the **DRYER** will be **BYPASSED**.



DRYER CONFIG
ARS :-

Automatic **R**e-**S**tart determines if a dryer resumes cycling when electrical power is reinstated after a **POWER FAILURE**.

Options:- ACTIVATED,
DISABLED

Default:- ACTIVATED

N.B. if **ARS** is **DISABLED** then the dryer will **FAULT SHUTDOWN** after a **POWER FAILURE**. If activated on Re-Start, providing the pressure is above the low pressure trip value the dryer will cycle.
Recommend installation of soft start valve on the outlet of dryer to stop low press overflow.

DRYER CONFIG
RTC :-

Rapid **T**est **C**ycle enables the dryer to be run on a 8 minutes/column cycle if the **DRYER MODE** is H/R. This enables the dryer hardware to be tested without having to wait 45minutes/column.

Options:- ACTIVATED,
DISABLED

Default:- **DISABLED**

N.B. all **TIME DELAYS** are **DISABLED** whilst RTC is ACTIVATED

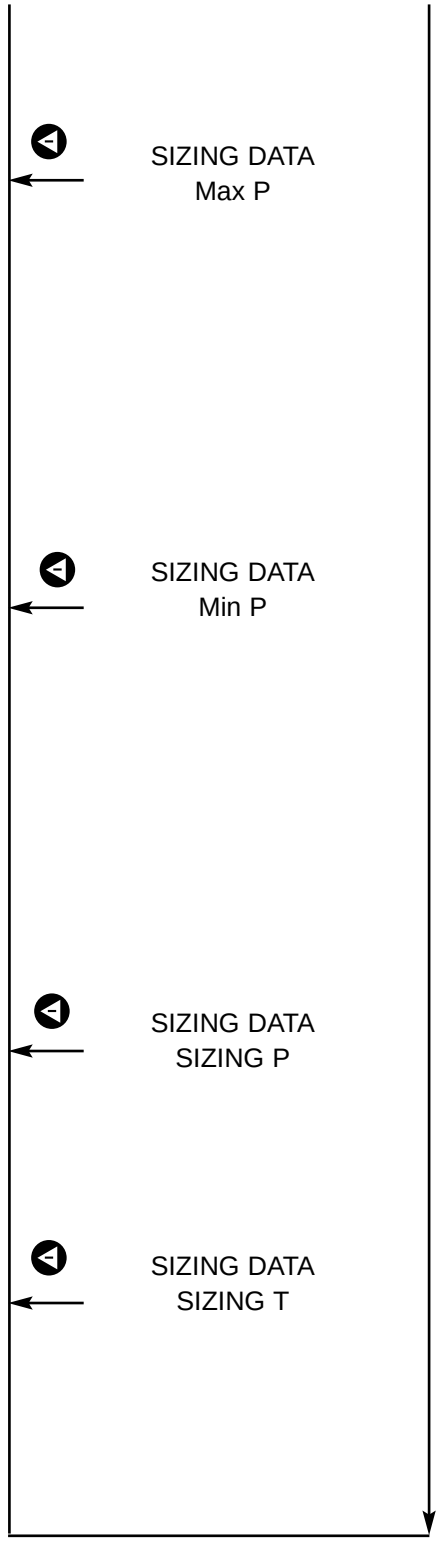
N.B. RTC is automatically DISABLED after 10 complete cycles.

3.04.02 **SIZING DATA MENU -VARIABLE**

This menu enables the operator to input the **SIZING DATA** for the dryer.

The menu structure is detailed below:-

Alphanumeric Display Text and Key Presses	Comments
PROTECTED DATA SIZING DATA	**SIZING DATA MENU** entry prompt
SIZING DATA MENU	**SIZING DATA MENU** header
SIZING DATA SIZING DP	the **SIZING D**ew**P**oin**t** is the dewpoint which the dryer has been designed to deliver. **Options:-** -40˚C - -70˚C (-40˚F - -94˚F), **Default:-** **-40˚C (-40˚F)**



N.B. if **DDS** is **ACTIVATED** then this value is the DDS switching level.

the **Max**imum **P**ressure is the highest pressure at which the dryer can be safely operated,
Options:- 10.5 bar g - 13.0 bar g (152 psi g - 189 psi g),
Default:- **10.5 bar g (152 psi g)**

N.B. dryer hardware **MUST** be modified if Max P is set greater than 10.5 bar g, (152 psi g).

N.B. if the inlet pressure to the dryer exceeds Max P, the dryer will **FAULT SHUTDOWN**.

the **Min**imum **P**ressure is the lowest pressure at which the dryer can be safely operated.
Options:- Fixed
Default:- **3.0 bar g (44 psi g)**

N.B. if the inlet pressure to the dryer is below Min P, the dryer will **FAULT SHUTDOWN**.

N.B. this value is determined by the minimum operating pressure of the spring return solenoid 5/2 valves which drive the compact pneumatic cylinders fitted to the inlet and exhaust of the dryer.

the **SIZING P**ressure is the inlet pressure which the dryer was designed to operate at.
Options:- 4.0 bar g - Max P (58 psi g - Max P),
Default:- **7.0 bar g (102 psi g)**
Reference:- see Max P above

the **SIZING T**emperature is the inlet temperature which the dryer was designed to operate at.
Options:- 35˚C - 55˚C (95˚F - 131˚F),
Default:- **35˚C (95˚F)**

N.B. the lowest Sizing T is set at 35˚C (95˚F) because no flow derating is carried out below this temperature.

3.04.03 **<u>ALARM SETTINGS MENU</u> -VARIABLE**

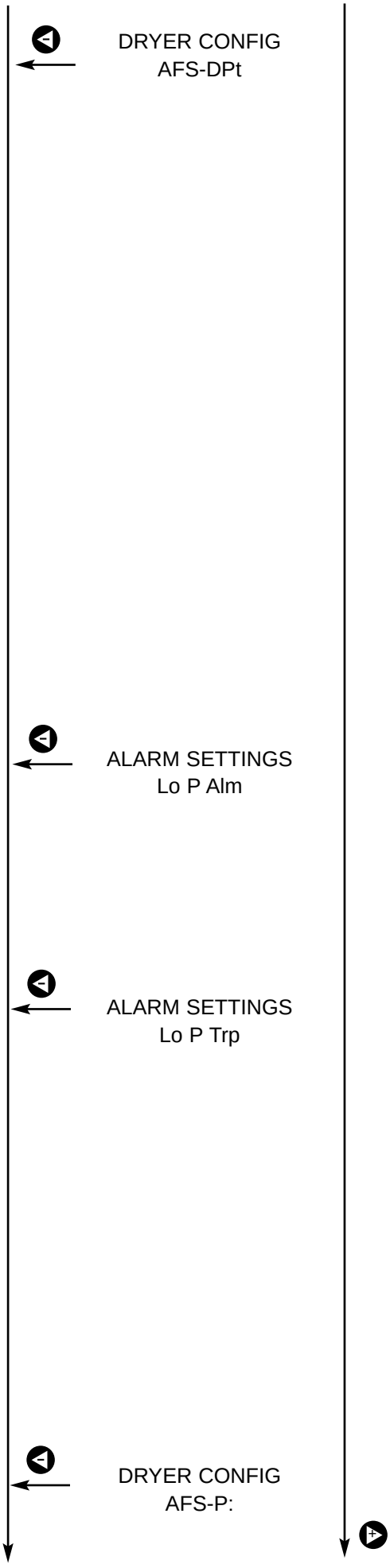
This menu enables the operator to set the **ALARM** (**WARNING**) and **TRIP** (**FAULT**) **LEVELS** for the dryer.

N.B. All alarms and trips are subject to the individual time delays detailed in the menu structure below. Dewpoint alarms and trips are also subject to the following acknowledgment delays, which are dependant on **DRYER MODE**, immediately following start-up:-

H/R = 2 complete regeneration cycles, (180 mins);
H/L = 10 complete regeneration cycles, (180 mins).

The menu structure is detailed below:-

Alphanumeric Display Text and Key Presses	Comments
PROTECTED DATA ALARM SETTINGS	**ALARM SETTINGS MENU** entry prompt
ALARM SETTINGS MENU	**ALARM SETTINGS MENU** header
ALARM SETTINGS Hi DPt Alm	the **H**igh **D**ew**P**oin**t** **Al**ar**m** Level is used to generate a **HIGH DEWPOINT WARNING**, this warns the plant operator that the outlet dewpoint of the dryer has deteriorated to a value above the SIZING DPt and is approaching the Hi DPt Trp Level. **Options:-** -30˚C - SIZING DPt (-22˚F - SIZING DPt), **Default:-** **-30˚C (-30˚F)** **Reference:-** see SIZING Dpt, section 3.04.02. see Hi DPt Trp below. **N.B.** the following time delays are implemented on the Hi Dpt Alm:- **H/L** = 150 seconds, **H/R** = fault delay minutes. These time delays are re-initiated each time the dryer changes over.
ALARM SETTINGS Hi DPt Trp	the **H**igh **D**ew**P**oint **Trip** Level is used to generate a **HIGH DEWPOINT FAULT**, this warns the plant operator that the outlet dewpoint of the dryer has deteriorated to a value which may be unacceptable to downstream processes. **Options:-** -30˚C - Hi DPt Alm (-22˚F - Hi Dpt Alm), **Default:-** **0˚C (32˚F)** **Reference:-** see Hi Dpt Alm above, see AFS-DPt, section 3.04.01. **N.B.** the following time delays are implemented on the Hi DPt Trp:- **H/L** = 150 seconds, **H/R** = fault delay minutes. These time delays are re-initiated each time the dryer changes over.



DRYER CONFIG
AFS-DPt

Automatic **F**ault **S**hutdown on **D**ew**P**oin**t** stops the :dryer cycling if a **HIGH DEWPOINT FAULT** is detected.

Options:- ACTIVATED, DISABLED
Default:- **ACTIVATED**
Reference:- see Hi Dpt Trp, section 3.04.03

N.B. on a 3rd consecutive FAULT SHUTDOWN on HIGH DEWPOINT, a **START INHIBIT** is put in place until either the dewpoint has recovered or AFS-DPt is DISABLED.
Reference:- see SIZING P, section 3.04.02.
see Lo P Trp below.

N.B. the following time delays are implemented on the Lo P Alm:-
H/L = fault delay minutes,
H/R = fault delay minutes

ALARM SETTINGS
Lo P Alm

the **L**ow **P**ressure **Al**ar**m** Level is used to generate a **LOW PRESSURE WARNING**, this warns the plant operator that the inlet pressure to the dryer has deteriorated to a value below the SIZING P and is approaching the Lo P Trp Level.
Options:- 3.0 bar g - SIZING P
(43 psi g - SIZING P),
Default:- **3.0 bar g (43 psi g)**

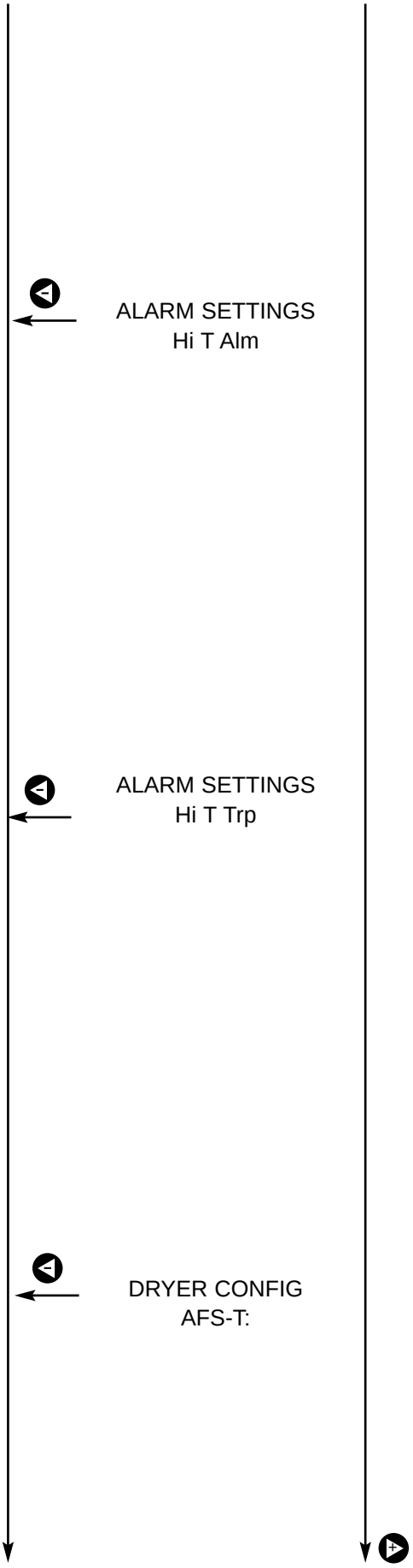
ALARM SETTINGS
Lo P Trp

the **L**ow **P**ressure **Tr**i**p** Level is used to generate a **LOW PRESSURE FAULT**, this warns the plant operator than the inlet pressure to the dryer has deteriorated to a value which may result in rapid deterioration of the outlet dewpoint and result in damage to the desiccant bed.
Options:- 3.0 bar g - Lo P Alm
(43 psi g - Lo P Alm),
Default:- **3.0 bar g (43 psi g)**
Reference:- see Lo P Alm above.
see AFS-P, section 3.04.01.

N.B. the following time delays are implemented on the Lo P Trp:-
H/L = fault delay minutes,
H/R = fault delay minutes

DRYER CONFIG
AFS-P:

Automatic **F**ault **S**hutdown on **P**ressure stops the dryer cycling if a **LOW PRESSURE FAULT** is detected.



Options:- ACTIVATED,
DISABLED
Default:- **ACTIVATED**
Reference:- see Lo P Trp, section 3.04.03

N.B. if the dryer performs a FAULT SHUTDOWN on LOW PRESSURE, a **START INHIBIT** is put in place until either the pressure has recovered or AFS-P is DISABLED.

ALARM SETTINGS
Hi T Alm

the **H**igh **T**emperature **Al**ar**m** Level is used to generate a **HIGH TEMPERATURE WARNING**, this warns the plant operator that the inlet temperature to the dryer has deteriorated to a value above the SIZING T and is approaching the Hi T Trp Level.
Options:- **SIZING T** - 55˚C
(**SIZING T** - 131˚F),
Default:- **55˚C (131˚F)**
Reference:- see SIZING T, section 3.04.02.
see Hi T Trp below.

N.B. the following time delays are implemented on the Hi T Alm:-
H/L = fault delay minutes,
H/R = fault delay minutes

ALARM SETTINGS
Hi T Trp

a **HIGH TEMPERATURE FAULT**, this warns the plant operator that the inlet temperature to the dryer has deteriorated to a value which may result in rapid deterioration of the outlet dewpoint and result in damage to the desiccant bed.
Options:- Hi T Alm - 55˚C
(Hi T Alm - 131˚F),
Default:- **55˚C (131˚F)**
Reference:- see Hi T Alm above.
see AFS-T, section 3.04.01.

N.B. the following time delays are implemented on the H T Trp:-
H/L = fault delay minutes,
H/R = fault delay minutes

DRYER CONFIG
AFS-T:

Automatic **F**ault **S**hutdown on **T**emperature stops the dryer cycling if a **HIGH TEMPERATURE FAULT** is detected.
Options:- ACTIVATED,
DISABLED
Default:- **ACTIVATED**
Reference:- see Hi T Trp, section 3.04.03

N.B. if the dryer performs a FAULT SHUTDOWN

on HIGH TEMPERATURE, a **START INHIBIT** is put in place until either the temperature has recovered or AFS-T is DISABLED.

ALARM SETTINGS
FAULT DELAY

the **FAULT DELAY** is the continuous time period for which an **ALARM** or **TRIP** event must be active before the **WARNING** or **FAULT** is logged in the **FAULT REGISTER**
Options:- 1 to 30 minutes
Default:- **30 minutes**

Auto Fault Reset will automatically restart the dryer once the fault event giving rise to the fault has cleared (alarm level only)

AFR Options - Disabled
- Activated

Default - Disabled

3.04.03a **I<u>NTERLOCKING OF DESIGN, ALARM AND TRIP LEVELS</u>**

PNEUDRI electronic has been configured so that all the design, alarm and fault levels are interlocked, as shown below, this ensures that it is not possible to generate a warning or fault if a parameter is “good”.

<u>DEWPOINT</u>

-80˚C						**0˚C**
-70˚C						**-30˚C**
I<	**SIZING Dpt**	**><**	**Hi Dpt Alm**	**><**	**Hi Dpt Trp**	**>|**

<u>TEMPERATURE</u>

35˚C						**55˚C**
|<	**SIZING T**	**><**	**Hi T Alm**	**><**	**Hi T Trp**	**>|**

<u>PRESSURE</u>

Min P						**Max P**
|<	**Lo P Trp**	**><**	**Lo P Alm**	**><**	**SIZING P**	**>|**
3.0B						**Max P**
						+7psig

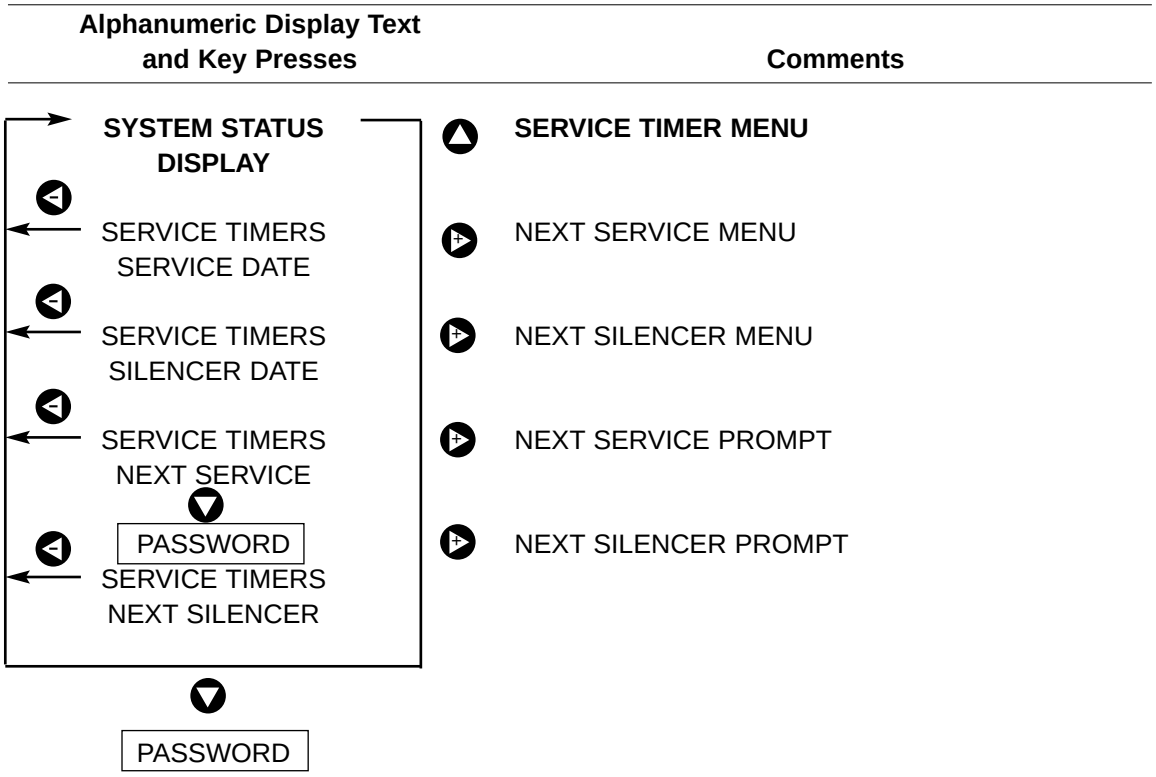
3.04.04 **COUNTDOWN TIMERS MENU**

This menu has been moved to the **SERVICE TIMER MENU**.

SERVICE TIMERS MENU

This menu enables the operator to access 4 menus, which in urn enable the operator to reset the dryer **COUNTDOWN TIMERS** for **NEXT SERVICE** and **NEXT EXHAUST SILENCER CHANGE**.

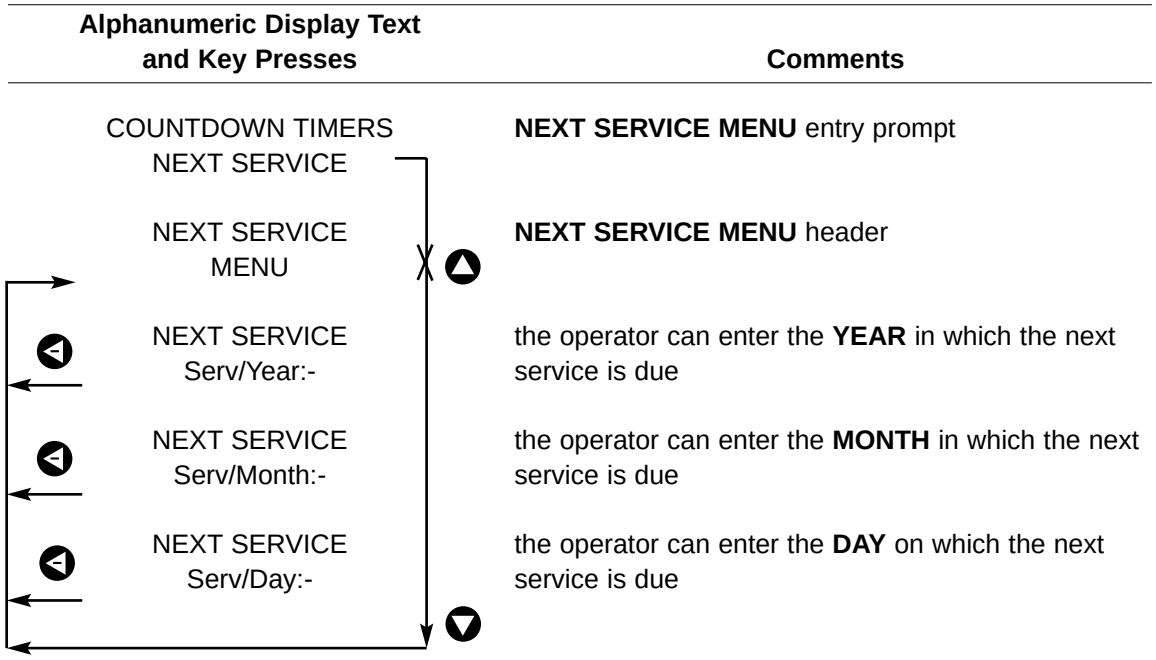
The menu structure is shown below:-



NEXT SERVICE MENU -VARIABLE

This menu is password protected to prevent inadvertent changes.

The menu structure is detailed below:-



3.04.04a **NEXT SERVICE MENU**

This menu is password protected to prevent inadvertent changes.

To enter the menu proceed as follows:-

Step No.	Key Presses	Alphanumeric Display	Comments
1		SERVICE TIMERS NEXT SERVICE	NEXT SERVICE ENTRY PROMPT
2	▼	NEXT SERVICE ENTER CODE ??????	PASSWORD ENTRY PROMPT
3	▲	ENTER CODE *?????	1ST CHARACTER IS ▲
4	◀	ENTER CODE **????	2ND CHARACTER IS ◀
5	◀	ENTER CODE ***???	3RD CHARACTER IS ◀
6	▼	ENTER CODE ****??	4TH CHARACTER IS ▼
7	▶	ENTER CODE *****?	5TH CHARACTER IS ▶
8	▶	ENTER CODE ******	6TH CHARACTER IS ▶

3.04.04b **NEXT SILENCER MENU**

This menu is password protected to prevent inadvertent changes.

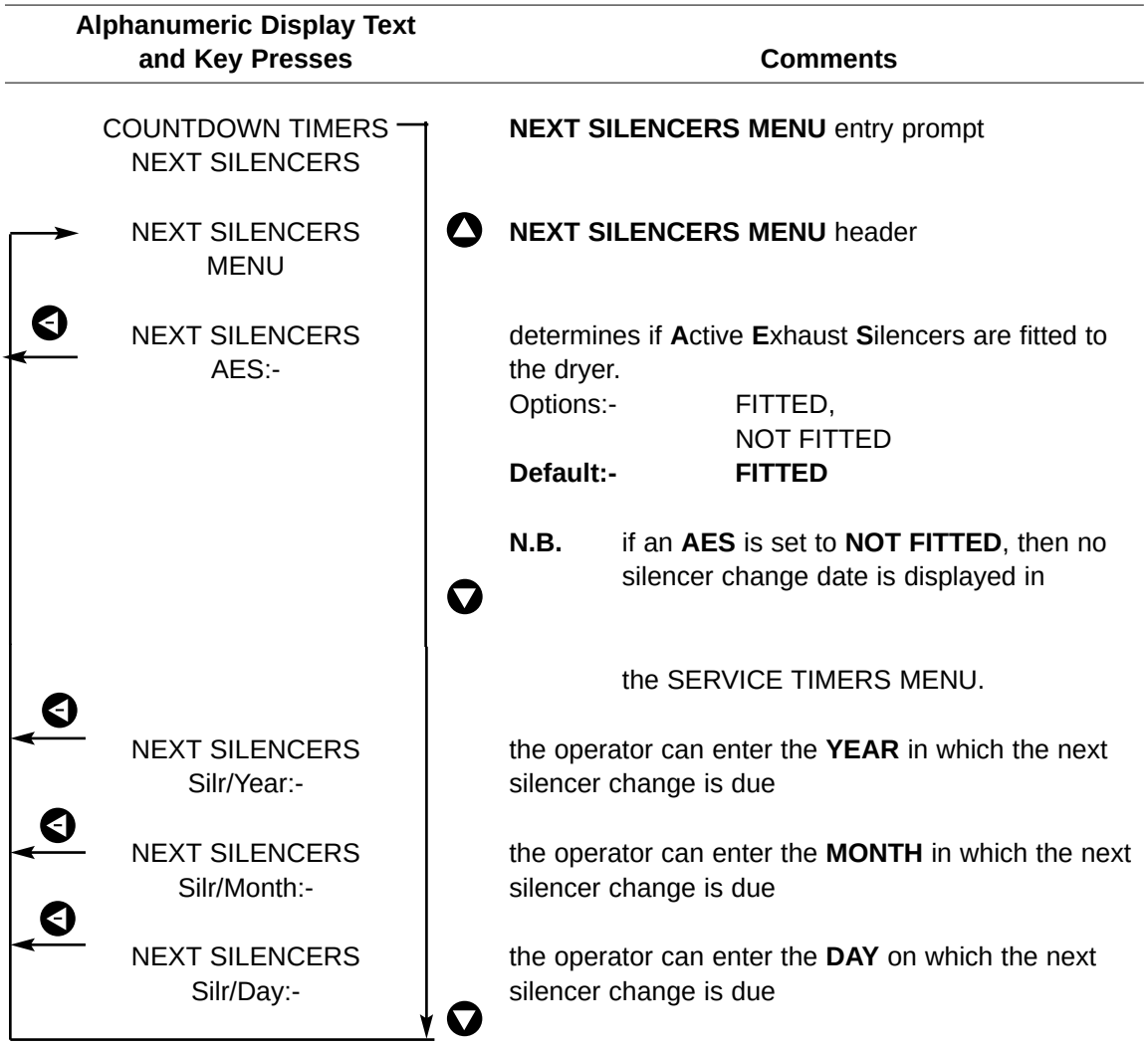
To enter the menu proceed as follows:-

Step No.	Key Presses	Alphanumeric Display	Comments
1		SERVICE TIMERS NEXT SILENCER	NEXT SILENCER ENTRY PROMPT
2	▼	NEXT SILENCER ENTER CODE ??????	PASSWORD ENTRY PROMPT
3	▼	ENTER CODE *?????	1ST CHARACTER IS ▼
4	▼	ENTER CODE **????	2ND CHARACTER IS ▼
5	▶	ENTER CODE ***???	3RD CHARACTER IS ▶
6	▲	ENTER CODE ****??	4TH CHARACTER IS ▲
7	▲	ENTER CODE *****?	5TH CHARACTER IS ▲
8	◀	ENTER CODE ******	6TH CHARACTER IS ◀

3.04.04b **<u>NEXT SILENCERS MENU</u> - VARIABLE**

This menu enables the operator to set the **DATE** on which the **NEXT SILENCER CHANGE** is due on the dryer.

The menu structure is detailed below:-



N.B. When you are requested to enter a date into the **PNEUDRI electronic**, you will be prompted to enter it in **YEAR**: **MONTH**: **DAY FORMAT**, this is to prevent unobtainable dates being entered, e.g. 31st February.

3.04.05 **<u>ONLINE TIMERS MENU</u> - VARIABLE**

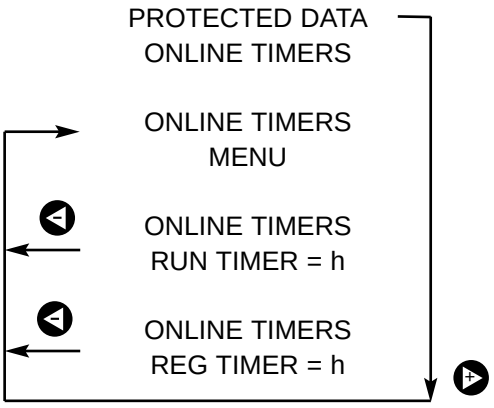
The **ONLINE TIMERS MENU** enables the operator to reset the **ONLINE TIMERS**, i.e. hours run and hours regenerating.

N.B. The ratio of these two values determines the **TOTAL ENERGY SAVING** obtained from the dryer, and for this reason these values should not changed, except when replacing an existing **PNEUDRI electronic** controller.

Default Dates 1/5/02

The menu structure is detailed below:-

Alphanumeric Display Text and Key Presses	Comments
PROTECTED DATA ONLINE TIMERS	**ONLINE TIMERS MENU** entry prompt
ONLINE TIMERS MENU	**ONLINE TIMERS MENU** header
ONLINE TIMERS RUN TIMER = h	the operator can reset the number of hours the dryer has been online and cycling
ONLINE TIMERS REG TIMER = h	the operator can reset the number of hours the dryer has been online and regenerating



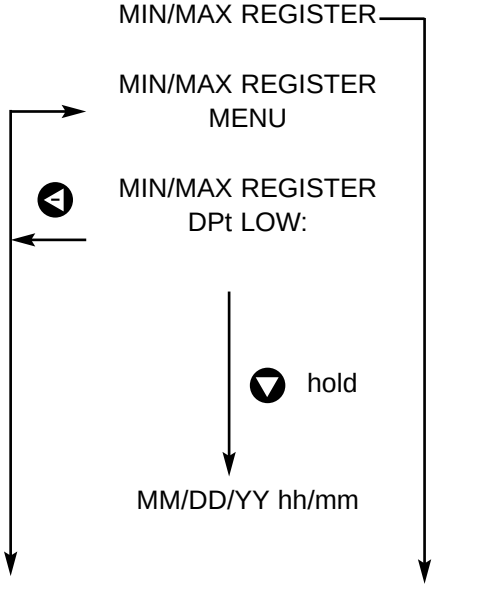
3.04.06 **MINMAX REGISTER**

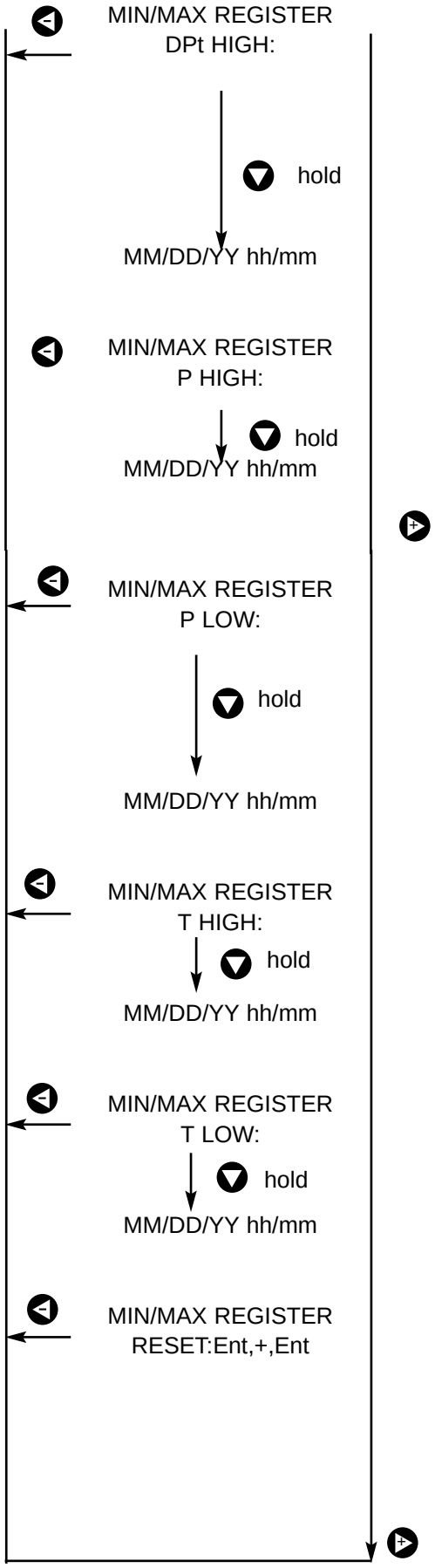
The **MIN**imum/**MAX**imum **REGISTER** enables the operator to view the minimum and maximum values of inlet pressure, inlet temperature and outlet dewpoint, as well as the time at which occurred.

N.B. The current value must be above the currently stored value, for 4 minutes before it is updated (in the case of a maximum value).
The current value must be below the currently stored value, for 4 minutes before it is updated (in the case of a minimum value).
In addition to the above verification delays, dewpoint minimum and maximum values are also subject to the following acknowledgment delays, which are dependent on **DRYER MODE**, immediately following start-up:-
H/R = 2 complete regeneration cycles
H/L = 10 complete regeneration cycles.

The menu structure is detailed below:-

Alphanumeric Display Text and Key Presses	Comments
PROTECTED DATA MIN/MAX REGISTER	**MIN**imum/**MAX**imum **REGISTER** entry prompt
MIN/MAX REGISTER MENU	**MIN/MAX REGISTER MENU** header
MIN/MAX REGISTER DPt LOW:	the operator can view the **LOWEST DEWPOINT** observed at the outlet of the dryer **Sensor** **Maximum** **Default:-** **+20˚C (+68˚F)**
hold	**N.B.** the word '**LOWEST**' refers to moisture content, therefore relates to '**BEST**' dewpoint.
MM/DD/YY hh/mm	displays the date and time at which the above value was observed.





the operator can view the **HIGHEST DEWPOINT** observed at the outlet of the dryer

Sensor **Minimum**
Default:- **-100˚C (-148˚F)**

N.B. the word '**HIGHEST**' refers to moisture content, therefore relates to '**WORSE**' dewpoint.

displays the date and time at which the above value was observed.

the operator can view the **HIGHEST PRESSURE** observed at the inlet to the dryer

Default:- **3.0 bar g (45.51 psi g)**

displays the date and time at which the above value was observed.

the operator can view the **LOWEST PRESSURE** observed at the inlet to the dryer

Default:- **13.5 bar g**
Sensor maximum Design

displays the date and time at which the above value was observed.

the operator can view the **HIGHEST TEMPERATURE** observed at the inlet to the dryer

Default:- **0˚C (32˚F)**

displays the date and time at which the above value was observed.

the operator can view the **LOWEST TEMPERATURE** observed at the inlet to the dryer

Default:- **+100˚C (+212˚F) 100˚C(212˚F)**

displays the date and time at which the above value was observed.

the operator can reset the **MIN/MAX REGISTERS** by carrying out the key presses shown, i.e. press:-

Key
followed by Key
followed by Key

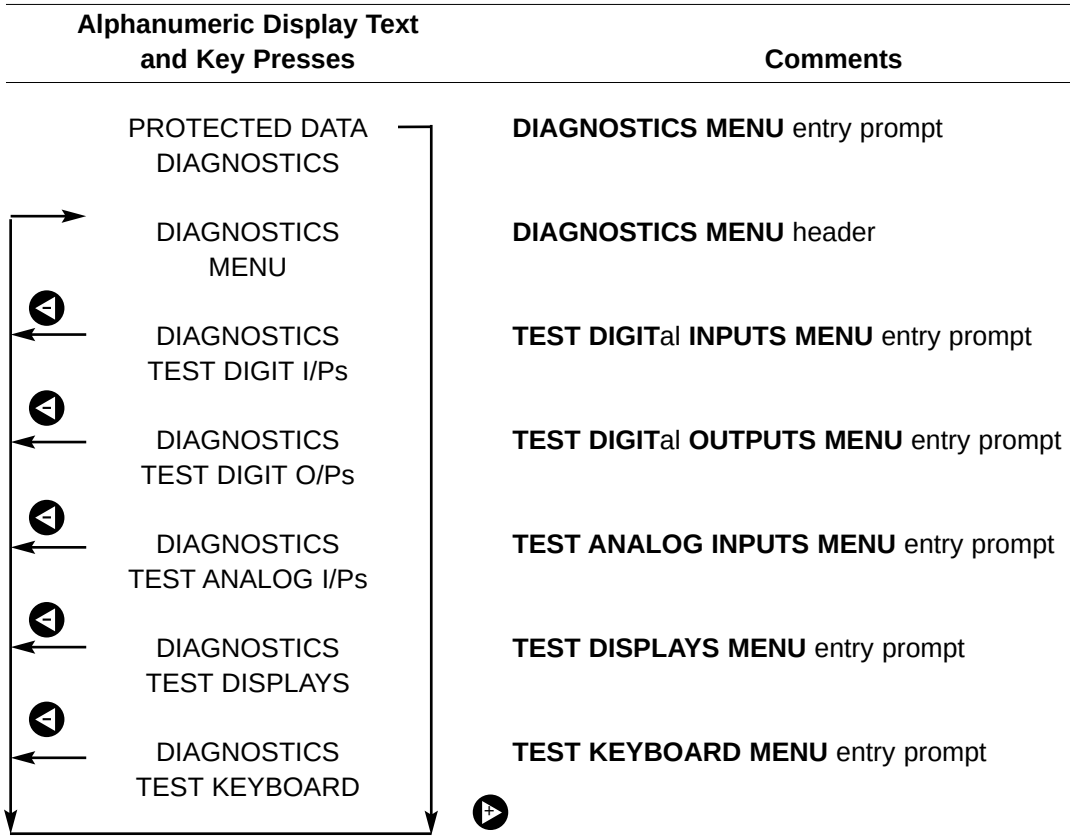
N.B. In all cases the default values are the extreme opposite to the values you would expect to see, this is to ensure that the values are updated as soon as the dryer starts cycling, (subject to time delays shown above).

3.04.07 DIAGNOSTICS MENU

The **DIAGNOSTICS MENU** enables the operator to access 5 sub-menus, which in turn enable the operator to verify the functionality of the dryer

N.B. THIS MENU CAN NOT BE ACCESSED WHILST THE DRYER IS CYCLING!!!

The menu structure is detailed below:-

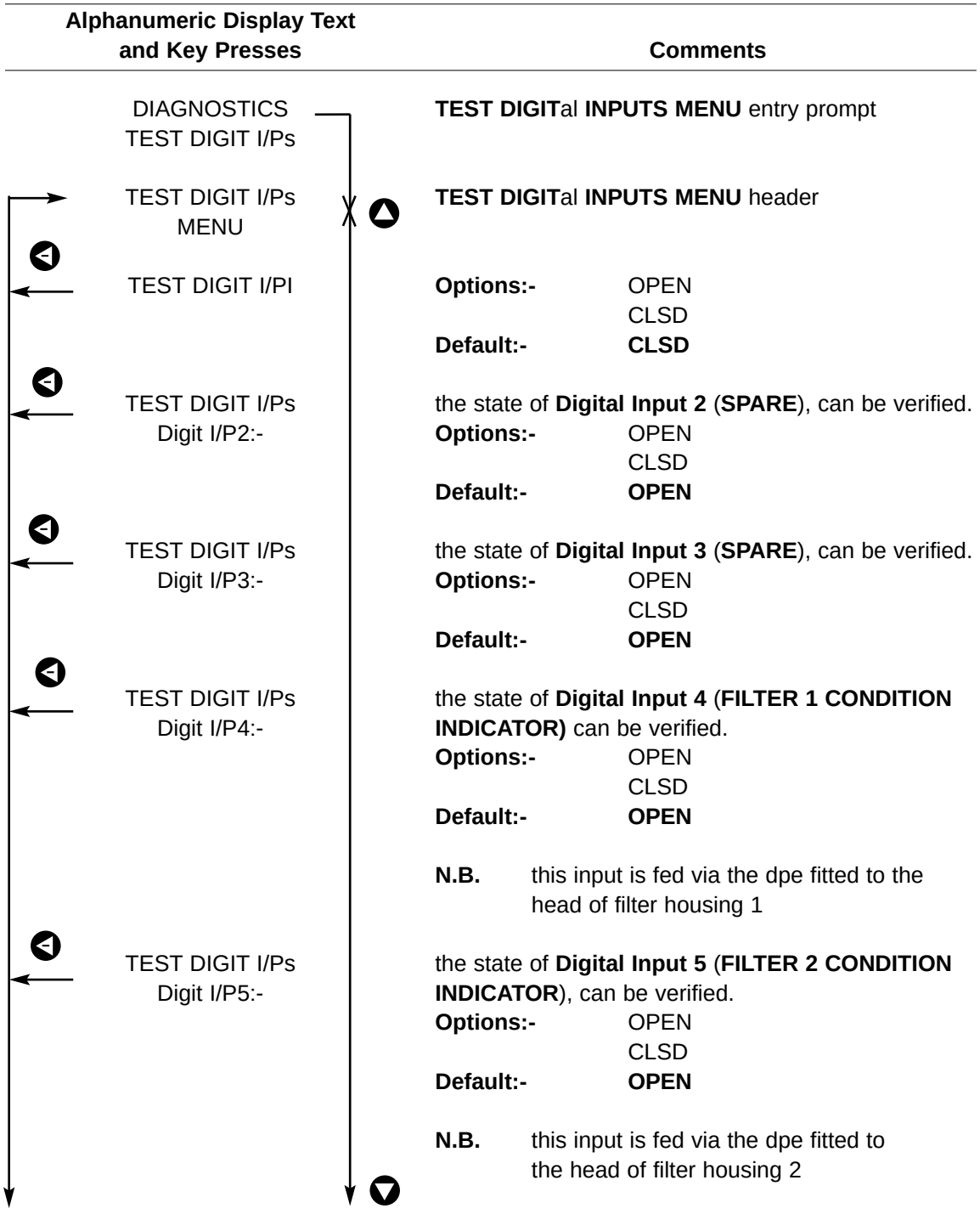


3.04.07a **<u>TEST DIGIT I/Ps MENU</u> -VARIABLE**

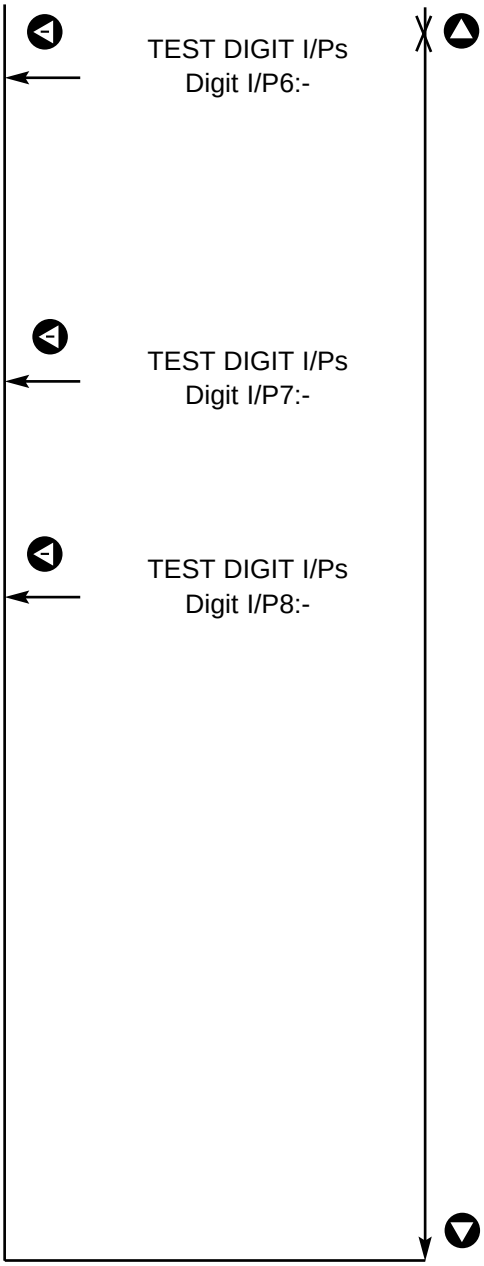
The **TEST DIGIT**al **INPUTS MENU** enables the operator to verify the signals received at the digital inputs to the **PNEUDRI electronic** controller. This is done by displaying the logic state of each individual digital input.

N.B. Applying 20Vdc to a digital input port will result in said input changing state from **OPEN** to **CLOSED**, (**CLSD**).

The menu structure is detailed below:-



Alphanumeric Display Text and Key Presses	Comments
DIAGNOSTICS TEST DIGIT I/Ps	**TEST DIGIT**al **INPUTS MENU** entry prompt
TEST DIGIT I/Ps MENU	**TEST DIGIT**al **INPUTS MENU** header
TEST DIGIT I/PI	**Options:-** OPEN CLSD **Default:-** **CLSD**
TEST DIGIT I/Ps Digit I/P2:-	the state of **Digital Input 2** (**SPARE**), can be verified. **Options:-** OPEN CLSD **Default:-** **OPEN**
TEST DIGIT I/Ps Digit I/P3:-	the state of **Digital Input 3** (**SPARE**), can be verified. **Options:-** OPEN CLSD **Default:-** **OPEN**
TEST DIGIT I/Ps Digit I/P4:-	the state of **Digital Input 4** (**FILTER 1 CONDITION INDICATOR)** can be verified. **Options:-** OPEN CLSD **Default:-** **OPEN** **N.B.** this input is fed via the dpe fitted to the head of filter housing 1
TEST DIGIT I/Ps Digit I/P5:-	the state of **Digital Input 5** (**FILTER 2 CONDITION INDICATOR**), can be verified. **Options:-** OPEN CLSD **Default:-** **OPEN** **N.B.** this input is fed via the dpe fitted to the head of filter housing 2



TEST DIGIT I/Ps
Digit I/P6:-

the state of **Digital Input 6** (**FILTER 3 CONDITION INDICATOR**), can be verified.

Options:- OPEN
CLSD

Default:- **OPEN**

N.B. this input is fed via the dpe fitted to the head of filter housing 3

TEST DIGIT I/Ps
Digit I/P7:-

the state of **Digital Input 7** (**CONTACTOR A**, **AUXILIARY CONTACT**), can be verified.

Options:- OPEN
CLSD

Default:- **OPEN**

TEST DIGIT I/Ps
Digit I/P8:-

the state of **Digital Input 8** (**CONTACTOR B**, **AUXILIARY CONTACT**), can be verified.

Options:- OPEN
CLSD

Default:- **OPEN**

N.B. if the **DRYER MODE** is set to **H/R** this input is used to detect if the desiccant bed heaters, column B, are switching correctly.

N.B. if a **HEATER FAULT** is detected then the dryer will either revert to a **H/L** cycle, or **FAULT SHUTDOWN**.

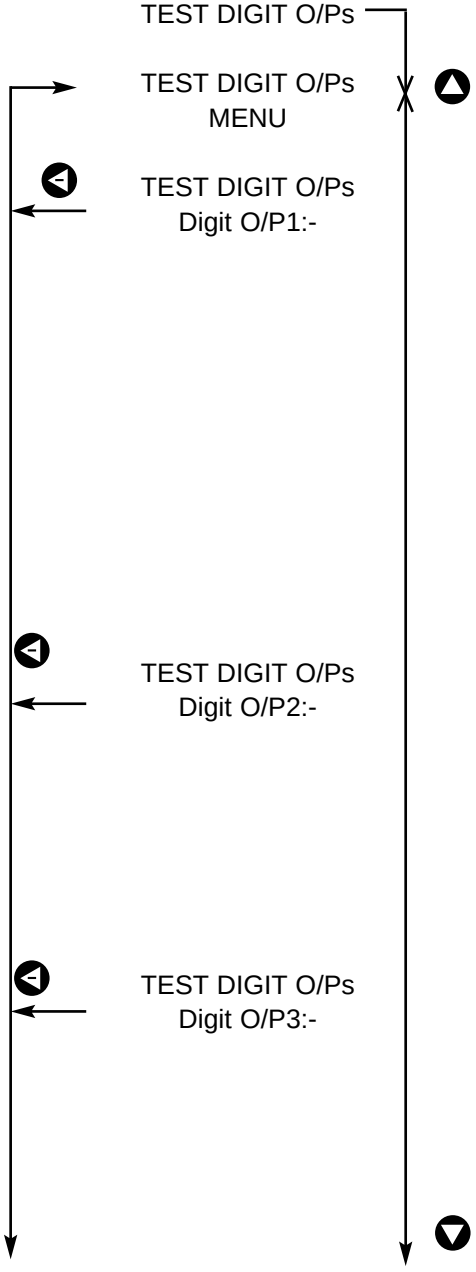
Reference:- see HEATER FAULTS, section 5.04.
see DRYER MODE, section 3.04.01.

3.04.07b **<u>TEST DIGIT O/Ps MENU</u> - VARIABLE**

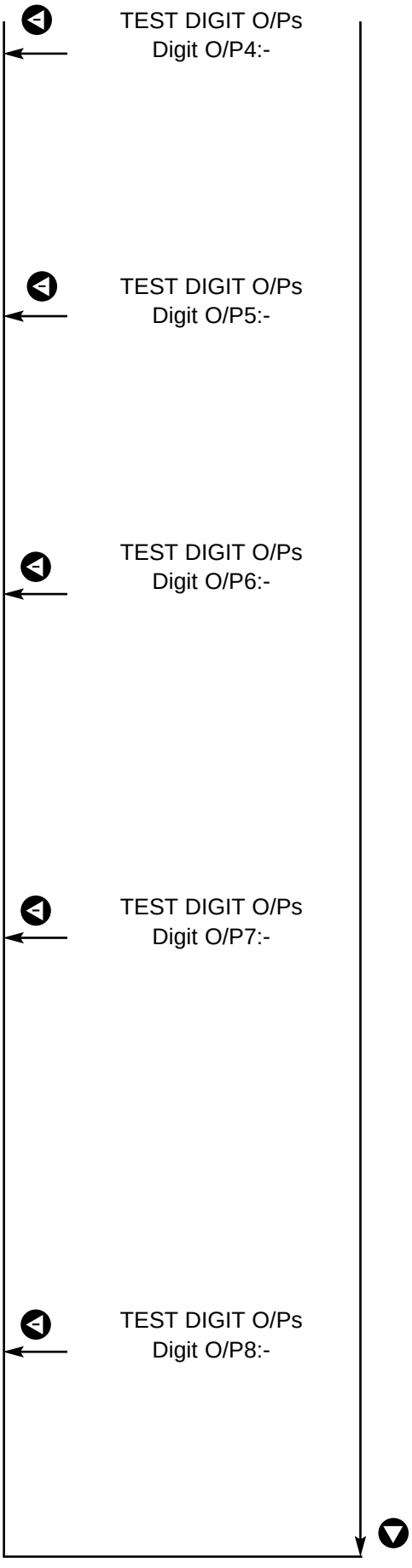
The **TEST DIGIT**al **OUTPUTS MENU** enables the operator to verify the signals sent via the digital outputs from the **PNEUDRI electronic** controller. This is done by allowing the operator to switch individual inputs **ON** and **OFF**.

N.B. **The dryer must be fully depressurised to carry out this function and can not be carried out if the inlet pressure to the dryer is greater than 0.2 bar g (3 psi g), this is to prevent cylinders being actuated when there is pressure behind them.**

The menu structure is detailed below:-



Alphanumeric Display Text and Key Presses	Comments
DIAGNOSTICS TEST DIGIT O/Ps	**TEST DIGIT**al **OUTPUTS MENU** entry prompt
TEST DIGIT O/Ps MENU	**TEST DIGIT**al **OUTPUTS MENU** header
TEST DIGIT O/Ps Digit O/P1:-	**Digital Ouput 1** controls the actuation of the 5/2 valve which drives the **INLET CYLINDER** on side **A**. **Options:-** ON OFF **Default:-** **OFF** **N.B.** switching the output **ON** sends a 24Vac signal to the solenoid valve, this actuates the valve, (provided there is sufficient pressure), and the compact cylinder retracts. **Reference:-** see Min P, section 3.04.02.
TEST DIGIT O/Ps Digit O/P2:-	**Digital Ouput 2** controls the actuation of the 5/2 valve which drives the **INLET CYLINDER** on side **B**. **Options:-** ON OFF **Default:-** **OFF** **Reference:-** see Min P, section 3.04.02.
TEST DIGIT O/Ps Digit O/P3:-	**Digital Ouput 3** controls the actuation of the 5/2 valve which drives the **EXHAUST CYLINDER** on side **A**. **Options:-** ON OFF **Default:-** **OFF** **Reference:-** see Min P, section 3.04.02.



TEST DIGIT O/Ps
Digit O/P4:-

Digital Ouput 4 controls the actuation of the 5/2 valve which drives the **EXHAUST CYLINDER** on side **B**.

Options:- ON
OFF

Default:- **OFF**

Reference:- see Min P, section 3.04.02.

TEST DIGIT O/Ps
Digit O/P5:-

Digital Ouput 5 provides a 24Vac output which duplicates the status of the **SYSTEM OK INDICATOR**. This output is not connected as standard, but connection facilities and glands are incorporated in the control enclosure.

Options:- ON
OFF

Default:- **OFF**

TEST DIGIT O/Ps
Digit O/P6:-

Digital Ouput 6 controls the actuation of the **AUTOMATIC BYPASS VALVE**.

Options:- ON
OFF

Default:- **OFF**

N.B. if the dryer has been configured as having an **ABV FITTED**, this digital output can not be tested, within the Diagnostics Menu.

Reference:- see ABV, section 3.04.01.

TEST DIGIT O/Ps
Digit O/P7:-

Digital Ouput 7 is a dual function output:-

1) if **DRYER MODE** is set to **H/R** then the output actuates the **HEATER CONTACTOR** for side **A**.
2) if **DRYER MODE** is set to **H/L** then the output actuates the **QRV**, if fitted.

Options:- ON
OFF

Default:- **OFF**

Reference:- see DRYER MODE, section 3.04.01;
see Digit I/P7, section 3.04.07a;
see QRV, section 3.04.01.

TEST DIGIT O/Ps
Digit O/P8:-

Digital Ouput 8 actuates the **HEATER CONTACTOR** for side **B**, if the **DRYER MODE** is set to **H/R**.

Options:- ON
OFF

Default:- **OFF**

Reference:- see DRYER MODE, section 3.04.01;
see Digit I/P7, section 3.04.07a;

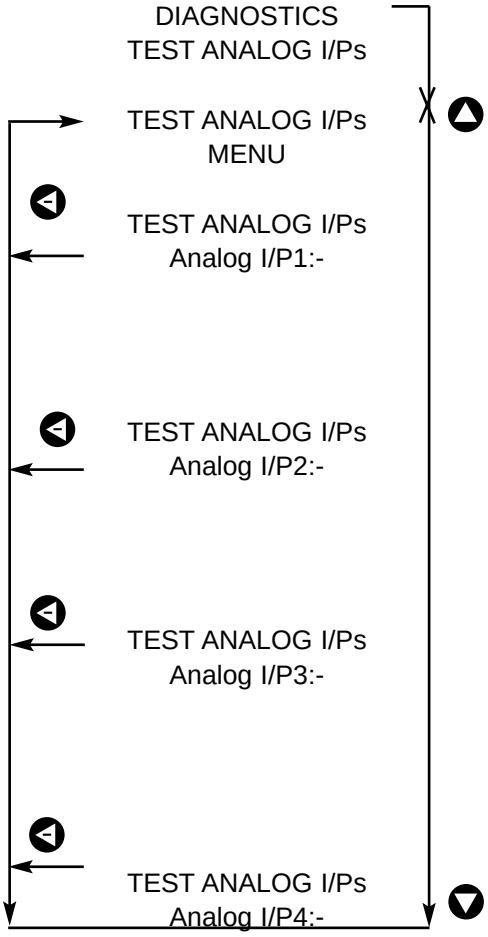
3.04.07c TEST ANALOG I/Ps MENU

The **TEST ANALOG INPUTS MENU** enables the operator to verify that the signals received on the analog input ports of the **PNEUDRI electronic** controller, fall within the expected range. This is done by displaying the digitised value of the analog signal received on a particular channel.

N.B. Each port can be individually configured to receive 1 of 8 different analog inputs, the values shown below only relate to the default **ANALOG INPUT CONFIGURATION**.

Reference:- see CONF ANALOG I/Ps, section 3.04.08b

The menu structure is detailed below:-



Alphanumeric Display Text and Key Presses	Comments
DIAGNOSTICS TEST ANALOG I/Ps	T**EST ANALOG INPUTS MENU** entry prompt
TEST ANALOG I/Ps MENU	**TEST ANALOG INPUTS MENU** header
TEST ANALOG I/Ps Analog I/P1:-	**Analog Input 1** is configured to receive a 1 to 6Vdc signal from the **INLET PRESSURE TRANSDUCER** **Working range:-** 205 to 1024; **Open circuit:-** 150; **Closed circuit:-** 1022.
TEST ANALOG I/Ps Analog I/P2:-	**Analog Input 2** is configured to receive a 1 to 6Vdc signal from the **OUTLET DEWPOINT SENSOR** **Working range:-** 205 to 1024; **Open circuit:-** 125; **Closed circuit:-** 1022.
TEST ANALOG I/Ps Analog I/P3:-	**Analog Input 3** is configured to receive a signal from a **KTY 10-62 TEMPERATURE SENSOR** located at the dryer **INLET** **Working range:-** 396 to 753; **Open circuit:-** 395; **Closed circuit:-** 754.
TEST ANALOG I/Ps Analog I/P4:-	**Analog Input 4** is configured to be spare.

3.04.07d **TEST DISPLAYS MENU**

The **TEST DISPLAYS MENU** enables the operator to verify the functionality of the **USER INTERFACE** and **SYNOPTIC DISPLAY**. This is done by displaying test text strings on the 3 displays, and illuminating all the L.E.D.s on the mimic diagrams.

The menu structure is detailed below:-

Alphanumeric Display Text and Key Presses	Comments
DIAGNOSTICS TEST DISPLAYS ↓	**TEST DISPLAYS MENU** entry prompt **DISPLAY TEST INITIATED**.

The following displays should be seen:-

1) **INLET TEMPERATURE DISPLAY** 8 8 8

2) **INLET PRESSURE DISPLAY** 8 8 8

3) **SYSTEM STATUS DISPLAY** line 1 A B C D E F G H I J K L M N O P

4) **SYSTEM STATUS DISPLAY** line 2 Q R S T U - 0 1 2 3 4 5 6 7 8 9

3.04.07e **TEST KEYBOARD MENU**

The **TEST KEYBOARD MENU** enables the operator to verify the functionality of the 8 keys incorporated into the **USER INTERFACE**. This is done by displaying individual test text string when each key is pressed.

The menu structure is detailed below:-

Alphanumeric Display Text and Key Presses	Comments
DIAGNOSTICS TEST KEYBOARD	**TEST KEYBOARD MENU** entry prompt **KEYBOARD TEST INITIATED**.

N.B. When the **KEYBOARD TEST** is initiated the 2nd line of the 2 x 16 character L.C.D. is blank until a key is pressed.

When a key is pressed one of the following text strings will be displayed on the 2nd line.

Alphanumeric Display Text	Comments
TEST KEYBOARD	NO key pressed
TEST KEYBOARD UP	 KEY pressed
TEST KEYBOARD DOWN	 KEY pressed
TEST KEYBOARD MINUS/LEFT	 KEY pressed
TEST KEYBOARD PLUS/RIGHT	 KEY pressed
TEST KEYBOARD ENTER	 KEY pressed
TEST KEYBOARD START	 KEY pressed
TEST KEYBOARD STOP	 KEY pressed
TEST KEYBOARD RESET	 KEY pressed

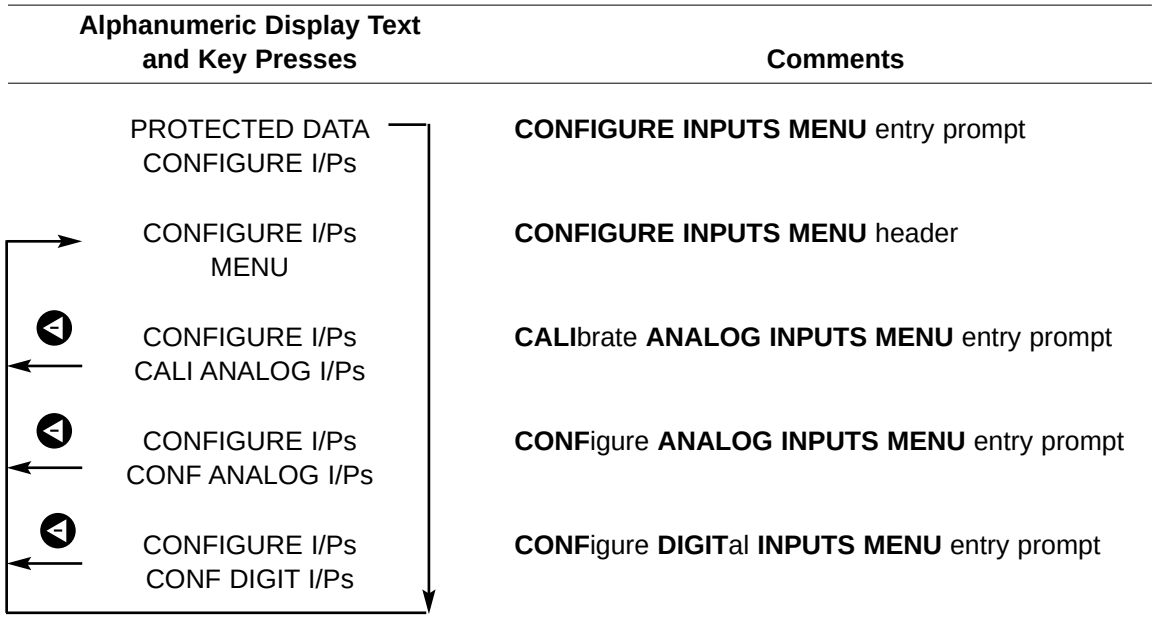
N.B. To exit the **KEYBOARD TEST MENU** press the KEY and the KEY simultaneously.

3.04.08 CONFIGURE I/Ps MENU

The **CONFIGURE INPUTS MENU** enables the operator to access 3 sub-menus, which in turn enable the operator to **CONFIGURE ANALOG INPUTS**, **DIGITAL INPUTS** and **DIGITAL OUTPUTS**.

N.B. THIS MENU CAN NOT BE ACCESSED WHILST THE DRYER IS CYCLING!!!

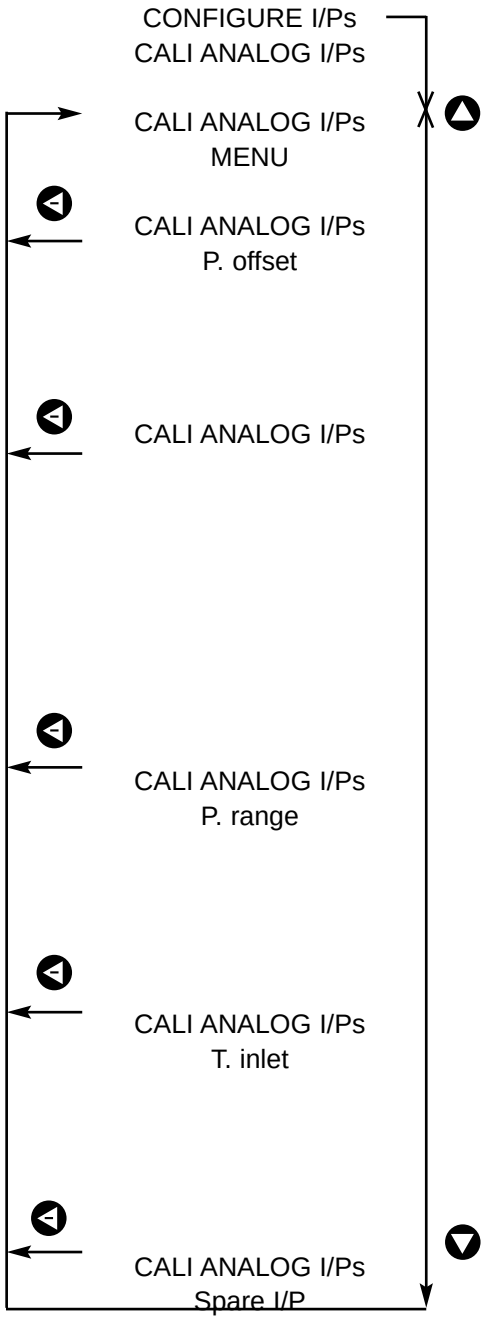
The menu structure is detailed below:-



3.04.08a **CALI ANALOG I/Ps MENU**

The **CALI**brate **ANALOG INPUTS MENU** enables the operator to adjust the **ZERO VALUES** of the **INLET PRESSURE** and **INLET TEMPERATURE**, as well as adjust the **RANGE** of the **INLET PRESSURE TRANSDUCER**.

The menu structure is detailed below:-



Alphanumeric Display Text and Key Presses	Comments
CONFIGURE I/Ps CALI ANALOG I/Ps	**CALI**brate **ANALOG INPUTS MENU** entry prompt
CALI ANALOG I/Ps MENU	**CALI ANALOG INPUTS MENU** header
CALI ANALOG I/Ps P. offset	the **P**ressure transducer **offset** can be zeroed, so that 0.0 bar g is displayed in the **INLET PRESSURE DISPLAY** when there is 0.0 bar g at the inlet to the dryer. **Options:- -37 - +43**
CALI ANALOG I/Ps	the **Dewpoint transmitter range** can be altered to D/Point between -100˚C (-148˚F) and + 20˚C (+68˚F) **Options:-** **Default:- - 100˚C** **Default Range:- - 120˚C**
CALI ANALOG I/Ps P. range	the **P**ressure sensor **range** can be altered, so that 6Vdc corresponds to a different **INLET PRESSURE**. **Options:-** 5.0 bar g - 16.0 bar g (73 psi g - 232 psi g) **Default:- 16.0 bar g (232 psi g)**
CALI ANALOG I/Ps T. inlet	the **T**emperature transducer, fitted to the **INLET** of the dryer, offset can be adjusted. **N.B.** it is unlikely that the operator has a calibrated temperature source, therefore this value should not be adjusted.
CALI ANALOG I/Ps Spare I/P	this analog input port is spare.

3.04.08b CONF ANALOG I/Ps MENU

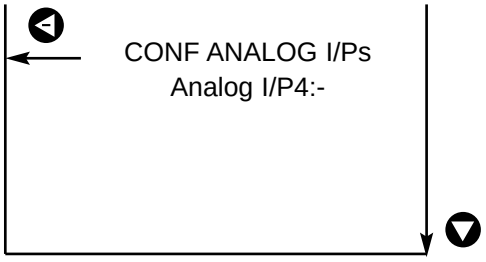
The **CONF**igure **ANALOG INPUTS MENU** enables the operator to set up a particular **ANALOG INPUT PORT** to receive any 1 of 8 different **ANALOG INPUT TYPES**.

N.B. The analog input type is referred to by a number, the inputs associated with a particular analog input type are as follows:-

0	=	NO INPUT
1	=	2 (4-20)
2	=	2 (4-20)
3	=	1.0 - 6.0Vdc
4	=	0.5 - 5.5Vdc
5	=	KTY 10 TEMPERATURE SENSOR
6	=	TD2A TEMPERATURE SENSOR
7	=	LM135 TEMPERATURE SENSOR
8	=	KTY 83 TEMPERATURE SENSOR

The menu structure is detailed below:-

Alphanumeric Display Text and Key Presses	Comments
CONFIGURE I/Ps CONF ANALOG I/Ps	**CONF**igure **ANALOG INPUTS MENU** entry prompt.
CONF ANALOG I/Ps MENU	**CONF ANALOG INPUTS MENU** header
CONF ANALOG I/Ps Analog I/P1:-	the analog input type being applied to **Analog Input 1** is displayed. **Options:-** 0 - 8 **Default:-** **2** **Reference:-** see TEST ANALOG INPUTS, section 3.04.07c
CONF ANALOG I/Ps Analog I/P2:-	the analog input type being applied to **Analog Input 2** is displayed. **Options:-** 0 - 8 **Default:-** **2** **Reference:-** see TEST ANALOG INPUTS, section 3.04.07c
CONF ANALOG I/Ps Analog I/P3:-	the analog input type being applied to **Analog Input 3** is displayed. **Options:-** 0 - 8 **Default:-** **5** **Reference:-** see TEST ANALOG INPUTS, section 3.04.07c



CONF ANALOG I/Ps
Analog I/P4:-

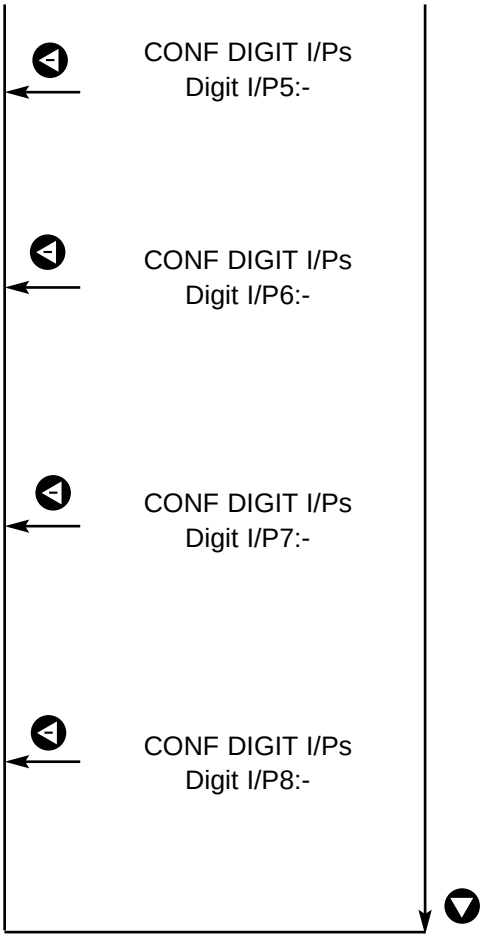
the analog input type being applied to **Analog Input 4** is displayed.
Options:- 0 - 8
Default:- **0**
Reference:- see TEST ANALOG INPUTS, section 3.04.07c

3.04.08c **CONF DIGIT I/Ps MENU**

The **CONF**igure **DIGIT**al **INPUTS MENU** enables the operator to set up a particular digital input port to be **NORMALLY OPEN** (**no**) or **NORMALLY CLOSED** (**nc**).

The menu structure is detailed below:-

Alphanumeric Display Text and Key Presses	Comments
CONFIGURE I/Ps CONF DIGIT I/Ps	**CONF**igure **DIGIT**al **INPUTS MENU** entry prompt.
CONF DIGIT I/Ps MENU	**CONF DIGIT INPUTS MENU** header
CONF DIGIT I/Ps Digit I/P1:-	displays the configuration for **Digital Input 1** **Options:-** n/c **Default:-** **n/c** **Reference:-** see TEST DIGIT INPUTS, section 3.04.07b **N.B.** this Digital Input receives a signal from an **EMERGENCY STOP BUTTON**, this button **MUST BE NORMALLY CLOSED**.
CONF DIGIT I/Ps Digit I/P2:-	displays the configuration for **Digital Input 2** **Options:-** n/c n/o **Default:-** **n/o** **Reference:-** see TEST DIGIT INPUTS, section 3.04.07b
CONF DIGIT I/Ps Digit I/P3:-	displays the configuration for **Digital Input 3** **Options:-** n/c n/o **Default:-** **n/o** **Reference:-** see TEST DIGIT INPUTS, section 3.04.07b
CONF DIGIT I/Ps Digit I/P4:-	displays the configuration for **Digital Input 4** **Options:-** n/c n/o **Default:-** **n/o** **Reference:-** see TEST DIGIT INPUTS, section 3.04.07b



CONF DIGIT I/Ps
Digit I/P5:-

displays the configuration for **Digital Input 5**
Options:- n/c
n/o
Default:- **n/o**
Reference:- see TEST DIGIT INPUTS, section 3.04.07b

CONF DIGIT I/Ps
Digit I/P6:-

displays the configuration for **Digital Input 6**
Options:- n/c
n/o
Default:- **n/o**
Reference:- see TEST DIGIT INPUTS, section 3.04.07b

CONF DIGIT I/Ps
Digit I/P7:-

displays the configuration for **Digital Input 7**
Options:- n/c
n/o
Default:- **n/o**
Reference:- see TEST DIGIT INPUTS, section 3.04.07b

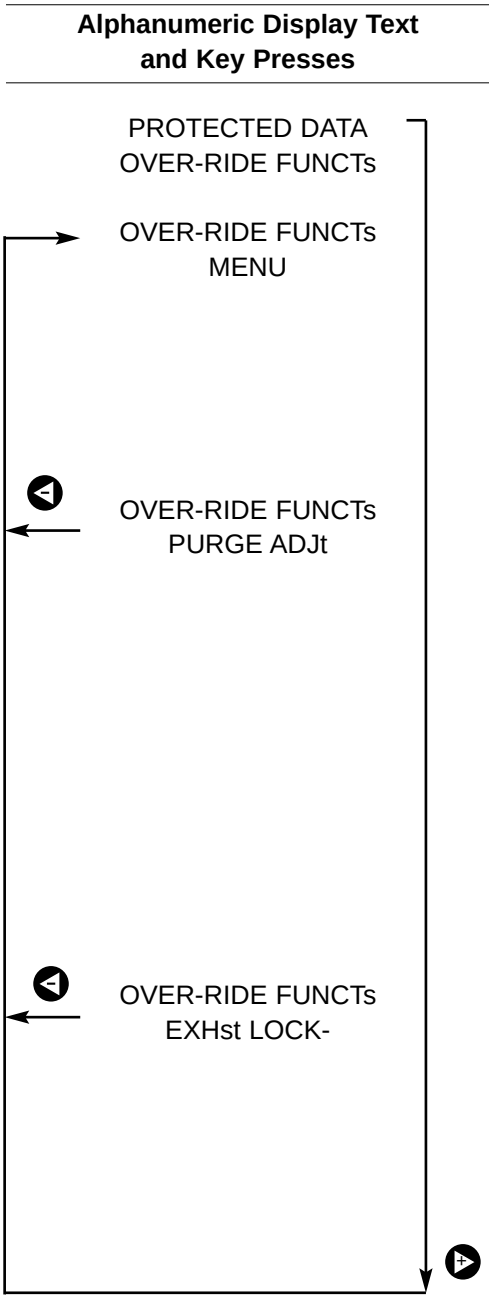
CONF DIGIT I/Ps
Digit I/P8:-

displays the configuration for **Digital Input 8**
Options:- n/c
n/o
Default:- **n/o**
Reference:- see TEST DIGIT INPUTS, section 3.04.07b

3.04.09 OVER-RIDE FUNCTs MENU

The **OVER-RIDE FUNCT**ions **MENU** enables the operator to access 3 functions, which in turn enable the operator to **DISABLE THE DRYER, SAFELY SET THE PURGE** and **CHANGE EXHAUST SILENCERS**.

The menu structure is detailed below:-



Alphanumeric Display Text and Key Presses	Comments
PROTECTED DATA OVER-RIDE FUNCTs	**OVER-RIDE FUNCT**ions **MENU** entry prompt
OVER-RIDE FUNCTs MENU	**OVER-RIDE FUNCTs MENU** header
	LOCK This function stops the operation of the dryer. Options:- ACTIVATED DISABLE Default:- **ACTIVATED**
OVER-RIDE FUNCTs PURGE ADJt	**PURGE ADJ**ustment function enables the operator to freeze the dryer cycle and maintain the dryer with 1 inlet cylinder and the opposite exhaust cylinder in an open condition. This enables the **DRYER PURGE** to be set without the danger of **BLOW-DOWN** occurring. **Options:-** ACTIVED DISABLE **Default:-** **DISABLED**
	N.B. Ensure the dryer is depressurised when this function is activated before connecting a rotometer.
OVER-RIDE FUNCTs EXHst LOCK-	**EXH**aust **LOCK** function enables the operator to freeze the dryer cycle and maintain the exhaust cylinders in a closed condition, to prevent **BLOW DOWN** whilst the Active Exhaust Silencers (AES) are being changed. **Options:-** YES, NO **Default:-** **NO** **Reference:-** see AES, section 3.04.04b

3.04.10 RESET OPERATIONS MENU

The **RESET OPERATIONS MENU** enables the operator to access 4 sub-menus, which in turn enable the operator to reset **FAULT REGISTERS, ENERGY SAVINGS, DEFAULTS** and **EVERYTHING**.

The menu structure is detailed below:-

Alphanumeric Display Text and Key Presses	Comments
PROTECTED DATA RESET OPERATIONS	**RESET OPERATIONS MENU** entry prompt
RESET OPERATIONS MENU	**RESET OPERATIONS MENU** header
RESET OPERATIONS RESET FAULTS	**RESET FAULTS MENU** entry prompt
RESET OPERATIONS ENERGY RESET	**ENERGY SAVINGS RESET MENU** entry prompt
FACTORY RESET	**FACTORY RESETS MENU** entry prompt

N.B. Before carrying out any of the **RESET OPERATIONS** ensure that all relevant data has been recorded using the appropriate record sheet, see **APPENDIX B**.
Consult service department for information reguarding reset operations

3.04.10a **RESET FAULTS MENU**

The **RESET FAULTS MENU** enables the operator to erase the contents of the **5 FAULT REGISTERS**.

The menu structure is detailed below:-

Alphanumeric Display Text and Key Presses	Comments
RESET OPERATIONS RESET FAULTS	**RESET FAULTS MENU** entry prompt
RESET FAULTS MENU	**RESET FAULTS MENU** header
RESET FAULTS PRESS:Ent,+,Ent	the operator can reset the **FAULT REGISTERS** by carrying out the key presses shown, i.e.press:- Key followed by Key followed by Key

3.04.10b **ENERGY RESET MENU**

The **ENERGY RESET MENU** enables the operator to **RESET** the **ELAPSED ENERGY SAVING DATA.** This enables the performance of the Dewpoint Dependent Switching (**DDS**) system (**IF ACTIVATED**) to be monitored and compared at regular intervals.

Reference:- see DDS, section 3.04.01.

The menu structure is detailed below:-

Alphanumeric Display Text and Key Presses	Comments
RESET OPERATIONS ENERGY RESET	**ENERGY RESET MENU** entry prompt
ENERGY RESET MENU	**ENERGY RESET MENU** header
ENERGY RESET PRESS:Ent,+,Ent	the operator can reset the **ELAPSED ENERGY SAVING** by carrying out the key presses shown, i.e.press:- Key followed by Key followed by Key **N.B.** this function can also be carried out by the customer via the **UNIT/LANG/RESET MENU**.

4. OPTIONAL EXTRAS

4.01 REMOTE ALARM/SYSTEM OK INDICATOR

The **PNEUDRI electronic** has a 24Vac digital output which mimics the status of the **SYSTEM OK INDICATOR** on the **USER INTERFACE**. By using this signal to drive an external relay you can configure the dryer to actuate a remote **ALARM** or **SYSTEM OK INDICATOR**.

4.01.02 CONNECTING A REMOTE ALARM INDICATOR TO THE EXTERNAL STATUS RELAY

To connect a remote alarm indicator to the external status relay proceed as follows:-

a) The only component needed is a length of suitable cable.

b) Press the ⊙ key to return the dryer to **STANDBY** (**as detailed in Operating & Maintenance Instructions**), by-passing the dryer if necessary.

c) Isolate the dryer from electrical supply

d) Connect electrical signal live supply for the **REMOTE ALARM INDICATOR** across the common (**COM**) and normally closed (**NC**) contacts of the external status relay.

e) If the electrical supply for the **REMOTE ALARM INDICATOR** is separately isolated, the dryer can be reconnected electrically and powered up.

4.01.03 CONNECTING A REMOTE SYSTEM OK INDICATOR TO THE EXTERNAL STATUS RELAY

To connect a remote system ok indicator to the external status relay proceed as follows:-

a The only component needed is a length of suitable cable.

b) Press the ⊙ key to return the dryer to **STANDBY** (**as detailed in Operating & Maintenance Instructions**), by-passing the dryer if necessary.

c) Isolate the dryer from electrical supply

d) Connect electrical signal live supply for the **REMOTE SYSTEM OK INDICATOR** across the common (**COM**) and normally open (**NO**) contacts of the external status relay.

e) If the electrical supply for the **REMOTE SYSTEM OK INDICATOR** is separately isolated, the dryer can be reconnected electrically and powered up.

VOLT FREE CONTACT CONNECTIONS

11 - COMMON
12 - N/C REMOTE FAULT INDICATOR
14 - N/O REMOTE RUNNING OK INDICATOR

4.02 AUTOMATIC BYPASS VALVE

The **PNEUDRI electronic** can be configured to drive an Automatic By-pass Valve (**ABV**), this enables the dryer to be bypassed if a **FAULT SHUTDOWN** or **POWER FAILURE** occurs, (**as detailed in Operating & Maintenance Instructions**).

N.B. The air received downstream of the dryer will be **WET**.

N.B. The positioning of the **ABV** within the air line is a matter of preference, and is not discussed in this section.

4.02.01 BYPASS VALVE SPECIFICATION

If an ABV is to be actuated by the **PNEUDRI electronic** it should satisfy the following specification:-

valve type:	ball valve solenoid actuated spring return normally open
solenoid voltage:	24Vac
minimum operating pressure:	3 bar g (44 psi g)
maximum operating pressure:	Max P **Reference:-** see Max P, section 3.04.02.
maximum pressure drop:	0.5 bar g (7 psi g) at 372NL/sec at 6 bar g (87 psi g)

4.02.02 CONNECTING AN AUTOMATIC BYPASS VALVE-ELECTRICALLY

To be wired into rear junction box.

a) Electrically isolate the dryer.

b) Open the Junction box located at the rear of the dryer on the inlet assy.

c) Remove the blanking plug from the spare cable gland, located on top of the junction box

d) Feed the 3 core cable through the gland and into the junction box.

e) Prepare the cable and terminate as shown below:-

core 1 -terminal 14 - 24 V AC
core 2 -terminal 13 - neutral
core 3 -terminal - earth

f) Route the cable to the ABV and terminate at the ABV solenoid plug as shown below:-

core 1 -pin 1 - 24 - AC
core 2 -pin 2 - neutral
core 3 -earth

g) Connect solenoid plug to solenoid.

h) Reconnect dryer electrically and pneumatically and power up.

i) Reconfigure software to show that an ABV is fitted.

4.02.03 **CONNECTING AN AUTOMATIC BYPASS VALVE-PNEUMATICALLY**

A pneumatic connection will need to be made to the solenoid valve which drives the **ABV**. This connection can be made at any point in the compressed air system, but if the **ABV** is adjacent to the dryer it can be made at the dryer inlet housing by proceeding as follows:-

a) Ensure you have all the parts you need to carry out the connection, you will need:-
   1) 1 x ⅛" - 6mm push-in T piece
   2) 1 x ⅛" - 6mm push-in fitting (**not always required**)
   3) 1 x length of 6mm o.d. tubing

b) If you have all the parts you require, carry out the **TAKE OFFLINE INSTRUCTIONS** (**as detailed in Operating & Maintenance Instructions**), bypassing the dryer if necessary.

c) When dryer is depressurised disconnect the 6mm red tubing from 6mm push-in fitting on the upper surface of the inlet housing.

d) Remove the ⅛" - 6mm push-in fitting from the inlet housing and replace with ⅛" - 6mm T piece (1)

e) Connect the 6mm red tubing to 1 of the ports on the T piece.

f) Fit ⅛" - 6mm push-in fitting (2) to solenoid valve, (if necessary).

g) Connect the 6mm o.d. tubing (3) to the remaining port on the T piece.

h) Route 6mm o.d. tubing to the solenoid valve and connect to 6mm push-in fitting.

i) Carry out the **BRING ONLINE INSTRUCTIONS** (**as detailed in Operating & Maintenance Instructions**).

N.B. The supply pressure to the solenoid valve may need to be regulated, e.g. **domnick hunter** approved **ABV** requires the pressure supply to the solenoid valve to be regulated to between 3 bar g (44 psi g) and 8 bar g (116 psi g).

4.03 SOFTWARE UPGRADES

From time to time customers maybe offered the option of purchasing new software for their **PNEUDRI electronic**, this software will be supplied stored in an **EPROM**, (Erasable Programmable Read Only Memory), and will necessitate an **EPROM** change.

4.03.01 CHANGING AN EPROM

To replace an **EPROM** within the **PNEUDRI electronic** controller proceed as follows:-

N.B. **EPROM's** are sensitive to Electro Static Discharge, you should therefore take precautions before handling, namely:-

1) an anti-static wrist band should be worn (where possible)
2) **never** handle device by pins
3) when inserting a new **EPROM** use an appropriate insertion tool

a) Carry out the **TAKE OFFLINE INSTRUCTIONS** (**as detailed in Operating & Maintenance Instructions**), by-passing the dryer if necessary.

b) When dryer is depressurised isolate from electrical supply

c) Disconnect the 4mm tubing from the mechanical pressure gauges and remove front facia plate from the control enclosure, (**held in place by 13 x m5 nuts accessed from inside instrumentation shroud**), disconnecting the p.c.b. and hygrometer cards from the rear of the electronic controller.

d) Remove black plastic plug from underside of the perforated stainless steel cover on the rear of the front facia panel (this is the electronic controller).

N.B. This plug protects a potentiometer which is used to adjust the contrast of the lcd **STATUS DISPLAY**.

e) Remove 6 x m3 screws and 2 x m3 hex fittings which retain the perforated stainless steel cover to the rear of the front fascia panel, and gently remove the cover.

f) The electronic controller consists of 2 pcbs joined via 2 ribbon cables and a 18 way steel prong connector. Separate the 2 pcbs by pivetting about the ribbon cable end.

g) Locate IC12 on the positively afixed pcb and remove 28 pin **EPROM** chip.

h) Insert the new **EPROM** using appropriate insertion tool, orientate **EPROM** so that the grooved end points toward the steel plate and is as far away from the steel plate as possible.

i) Carefully reassemble unit, replacing perforated stainless steel cover.

j) Reconnect p.c.b. and hygrometer cards to the rear of the electronic controller.

Reference:- see WIRING SCHEMATIC/ TABLE, APPENDIX A

k) Replace front facia plate (**ensuring sealing gasket and bezel are in place**) to the control enclosure and fasten in place, (**held in place by 13 x m5 nuts accessed from inside instrumentation shroud**), and reconnect the 4mm tubing to the mechanical pressure gauges.

Reference:- see PIPING SCHEMATIC, APPENDIX A

N.B. **THE NUTS WHICH SECURE THE FRONT FACIA TO THE CONTROL ENCLOSURE SHOULD NOT BE OVER TORQUED.**

The torque required depends on the material of construction of the front facia, namely:-

1.1 Nm - aluminium ,

2.0 Nm - stainless steel

l) Reconnect dryer electrically and power up.

N.B. At power up the new **EPROM** version should be displayed on the **INLET TEMPERATURE DISPLAY**.

m) Recommission the **PNEUDRI electronic**.

Reference:- see COMMISSIONING PROCEDURE, section 2

5. HARDWARE FAULTS

The **PNEUDRI electronic** has been designed so that if a hardware fault is found the control enclosure and/or the “contactor” box can be easily replaced. In some cases a fault may be easily detected and rectified in the field, this section is meant as guide to locating such faults and details the rectification process.

The **PNEUDRI electronic** can detect several different hardware faults, these faults are flagged and in some cases acted upon automatically.

5.0.1 FAULT TABLES

PROBLEM	VISUAL PRIMARY	INDICATION SECONDARY	CAUSE	CHECK	REMEDY
No air flow through dryer	Loss of downstream pressure	STANDBY displayed	STOP key pressed	Dryer display	Press START key
		POWER ON indicator not illuminated	Loss of electrical power	See below	See below
		FAULT SHUTDOWN displayed	FAULT SHUTDOWN has occurred	Dryer display and fault registers	Rectify fault causing shutdown
		No pressure on online gauge but dryer cycling	Faulty inlet solenoid valve	Operation of inlet solenoid valve	Replace solenoid valve if necessary
		Displays blank			
No electrical power to the dryer	POWER ON indicator not illuminated		Supply isolated at MCB	MCB switch position	Switch MCB to ON position
			Blown controller fuse	Fuse in transformer box	Replace fuse
		Low inlet pressure indicator illuminated	Interruption to incoming supply	Incoming supply	Replace fuses if necessary
Poor dewpoint	High outlet moisture indicator illuminated displayed dewpoint	High inlet temperature indicator illuminated	Interruption to upstream air supply	Compressor down stream regulates and controls valves	
		Pressure gauge showing back pressure on depressurised side	Failure of compressor after-cooler	Compressor aftercooler	
		Regenerating column does not depressurise	Exhaust elements blocking up Excess purge	Element media blocked up water, desiccant or oil carryover	Replace elements. Check for desiccant attrition and oil carryover. Check Purge
		Dryer fails to pressurise	Faulty exhaust solenoid valve/ Inlet solenoid	Operation of exhaust solenoid/ valve/Inlet valve	Replace solenoid valve if necessary
			Air leak	For broken or damaged exhaust/inlet valve disks as above	Replace if necessary
			Purge air too low	Purge rate	Reset purge rate

PROBLEM	VISUAL PRIMARY	INDICATION SECONDARY	CAUSE	CHECK	REMEDY
			Air flow demand too high	Check for recent additions to compressed air system or excessive peak demands	
		Heater fault logged in Fault Register	Heater contactor fault experienced	See section 5.05	See section 5.05
			Entrained water	Check pre-filter drains	Replace drains if necessary
			Contaminated desiccant	Desiccant condition	Replace desiccant and eliminate source of contamination
High Pressure Drop	Column pressure gauges		Excessive outlet flow	Outlet flow	Regulate
	Filter condition indicators illuminated	Differential pressure gauges in red	Blocked filter	Filter element	Replace filter element
Excessive power consumption (H/R only)	Cables overheating or overloading and tripping		Excessive purge flow	Check purge flow	Regulate purge flow accordingly
Faulty Dewpoint sensor	Dew probe fault logged in Fault Register	DDS disabled	See section 5.02.01	See section 5.02.02	See section 5.02.03
Faulty Inlet Pressure Sensor	Pres probe Fault logged in Fault register	FAULT SHUT-DOWN implemented	See section 5.03.01	See section 5.03.02	See section 5.03.03
Faulty Inlet Temperature Sensor	Pres Probe Fault logged in Fault Register		See section 5.04.01	See section 5.04.02	See section 5.04.03

5.02 DEW TRANSMITTER FAULT

A **DEW PROBE FAULT** is flagged if the controller has detected a fault on the hygrometer sensor or interface pcb, (**used to monitor outlet dewpoint**).

N.B. If a **DEW TRANSMITTER FAULT** is detected then **DDS** is **DISABLED**.

5.02.01 Verification Of Fault

Press the (R) key (whilst the dryer is cycling).

If the **FAULT CLEARS** - re-activate DDS.
Reference:- see DDS, section 3.04.01.

If the **FAULT DOES NOT CLEAR** - establish type of fault as follows:-

a) Go to **CONF ANALOG I/Ps MENU**
Analog I/P2 should be set to 2.

Reference:- see Analog I/P2, section 3.04.08b.

b) Go to **SYSTEM STATUS MENU**

dewpoint - 80˚C (-112˚F) -	open circuit	-100˚C
dewpoint +20˚C (+68˚F) -	short circuit	

OR

b) Go to **TEST ANALOG I/Ps MENU**

Analog I/P2 ≤ 125 -	open circuit
Analog I/P2 ≥ 023 -	short circuit

Reference:- see Analog I/P2, section 3.04.07c.

5.02.02

To locate a DEW PROBE FAULT proceed as follows:-

Connect a sensor simulator to the sensor cable, 1 of the following responses will be obtained -

a) Correct dewpoint value is displayed at each setting of the sensor simulator, namely –90ºC, -65ºC, -45ºC, -35ºC, -25ºC and –15ºC. This indicates a fault to the dewpoint sensor, replace the dewpoint sensor.

b) Constant –100ºC or +20ºC is displayed. This indicates a fault to the sensor cable, replace the sensor cable.

c) Incorrect dewpoint displayed but changes at each setting of the sensor simulator. This indicates that the controller is not configured correctly, check that the configuration is as follows: -

i) **PROTECTED DATA/DRYER CONFIG**
DOT: LINEAR

ii) **PROTECTED DATA/CONFIGURE I/Ps/Cali ANALOG I/Ps**
Hyg Min: -100ºC
Hyg Range: 120ºC

iii) **PROTECTED DATA/CONFIGURE I/Ps/Conf ANALOG I/Ps**
ANALOG I/P 2: 2

5.02.03 **Rectification Of Fault**

The action taken to rectify a fault depends on the type of fault encountered.

N.B. Ensure dryer is isolated electrically and pneumatically before attempting to replace any components.

a) **SENSOR FAULT**

i) Disconnect the sensor cable from the head of the Cermet transmitter.
ii) Unscrew the Cermet transmitter from the hygrometer sensor block.
iii) Screw replacement Cermet transmitter into the hygrometer sensor block.
iv) Connect sensor cable to head of Cermet transmitter

b) **TRANSMITTER CABLE FAULT**

i) Remove existing transmitter cable.
ii) Fit new transmitter cable.

5.03 PRES SENSOR FAULT

PRES PROBE FAULT is flagged if the controller has detected a fault on the pressure transducer (**used to monitor inlet pressure**). If not it will be a wiring fault.

N.B. If a **PRES PROBE FAULT** is detected the dryer will **FAULT SHUTDOWN**.

5.03.01 Verification Of Fault

Press the R key.

If the **FAULT CLEARS** - no action required.
If the **FAULT DOES NOT CLEAR** - establish type of fault as follows:-

a) Go to **CONF ANALOG I/Ps MENU**
Analog I/P1 **should be** set to 3.
Reference :- see Analog I/P1, section 3.04.08b.

b) Go to **CALI ANALOG I/Ps MENU**
P range **should be** set to 16 bar g (232 psi g).
Reference :- see P range, section 3.04.08a.

c) Go to **TEST ANALOG I/Ps MENU**
Analog I/P1 ≤ 150 - open circuit
Analog I/P1 ≥ 023 - short circuit
Reference :- see Analog I/P2, section 3.04.07c.

5.03.02 Location Of Fault

Any **PRES PROBE FAULT** is likely to be due to an actual fault on the pressure transducer itself denoted by three broken lines in the pressure box.
Reference :- see WIRING SCHEMATIC/ TABLE, APPENDIX A

5.03.03 Rectification Of Fault

To replace a pressure transducer proceed as follows:-.

a) Disconnect the micro connector from the pressure transducer.

b) Disconnect the 4mm red tubing from the 4mm push-in fitting,situated on the base of the control enclosure, and unscrew.

c) Remove “faulty” pressure transducer and replace.

d) Screw ¼" female - 4mm push-in fitting onto pressure transducer thread, ensure that a ¼" Dowty seal is placed between the transducer and the ferrule.

e) Connect the 4mm red tubing to the 4mm push-in fitting.

f) Connect the micro connector to the pressure transducer

N.B. If the **three broken lines** appear in the pressure box the dryer will **not operate**

5.04 TEMP PROBE FAULT

A TEMP PROBE FAULT is flagged if the controller has detected a fault on the temperature transducer (used to monitor inlet temperature).

5.04.01 Verification Of Fault

Press the R key.

If the **FAULT CLEARS** - no action required.
If the **FAULT DOES NOT CLEAR -** establish type of fault as follows:-

a) Go to **CONF ANALOG I/Ps MENU**
Analog I/P3 **should be** set to 5.
Reference:- see Analog I/P3, section 3.04.08b.

b) Go to TEST ANALOG I/Ps MENU
Analog I/P1 ≤ 395 open circuit
Analog I/P1 ≥ 754 short circuit
Reference:- see Analog I/P3, section 3.04.07c.

5.04.02 Location Of Fault

Denoted by three broken lines in the **TEMP** box, any **TEMP PROBE FAULT** is likely to be due to an actual fault on the temperature transducer itself, if not it will be a wiring fault.
Reference:- see WIRING SCHEMATIC/ TABLE, APPENDIX A

5.04.03 Rectification Of Fault

To replace a temperature transducer proceed as follows:-.

a) Carry out the **TAKE OFFLINE INSTRUCTIONS** (**as detailed in Operating & Maintenance Instructions**), by-passing the dryer if necessary.

b) Disconnect the sealed connector from the temperature transducer, this is located on the lower surface of the dryer inlet housing.

c) Unscrew the “faulty” temperature transducer and replace, ensure that a m10 Dowty seal is placed between the temperature transducer and the base of the inlet assy.

d) Connect the micro connector to the temperature transducer.

e) Bring the dryer online, following the procedure detailed in the **BRING ONLINE INSTRUCTIONS.**

N.B. If the **three broken lines** appear in the temp box the dryer will continue to operate with a permenant temp fault indicated.

5.05 CONTACTOR FAULTS

CONTACTOR FAULT is flagged if the controller does or does not receive a feedback signal from the heater contactors at the appropriate time in the dryer cycle (**used to switch desiccant bed heaters on**).

N.B. If a feedback signal is received by the controller when there should be no signal, the dryer will **FAULT SHUTDOWN**. (Contactor welded in).
If no feedback signal is received by the controller when there should be a signal, the dryer will revert to a **HEATLESS** mode of operation.

5.05.01 Verification Of Fault

The controller informs the operator of which column the fault is detected on.
The easiest way to verify a **CONTACTOR FAULT** is to use the Rapid Test Cycle.

Reference:- see H/R, section 3.04.01,
see RTC, section 3.04.01.

5.05.02 Location Of Fault

a) If the fault is due to the contactors “welding in” the blue button on said contactor will be depressed constantly.

b) If the fault is due to the contactors not”pulling in” proceed as follows:-

i) Carry out the **TAKE OFFLINE INSTRUCTIONS** (**as detailed in Operating & Maintenance Instructions**), bypassing the dryer if necessary.

ii) Go to **TEST DIGITAL O/Ps MENU**
Does the appropriate heater contactor pull in when the Digit O/P is switched **ON**?

Reference:- see Digit O/P7/8,
section 3.04.07b.

YES - fault is on feedback side of circuit

iii) Remove the front cover from the upper contactor box.

N.B. This operation can only be carried out with the dryer fully depressurised.

N.B. The contents of the contactor box are still **LIVE**, and this procedure should only be carried out by competent persons with appropriate tools.

iv) Go to **TEST DIGITAL I/Ps MENU**
Does the appropriate Digit I/P change state when the blue button on the heater contactor under test is depressed?

Reference :- see Digit I/P7/8
section 3.04.07a.

YES - fault is on activation side of circuit

5.05.03 Rectification Of Fault

To replace a heater contactor proceed as follows:-.

a) Carry out the **TAKE OFFLINE INSTRUCTIONS** (**as detailed in Operating & Maintenance Instructions**), by-passing the dryer if necessary.

b) When dryer is depressurised isolate from electrical supply

c) Remove the clear cover from the upper contactor box (retained by 4 plastic screws).

d) Disconnect all wires terminating at the heater contactor to be changed, disconnect contactor from dinrail (**this is done by applying leverage to the cream retaining clip**) and remove.

N.B. The contactors are 24Vac coils

e) Clip replacement contactor to din rail.

f) Reconnect all wires and replace clear cover.

g) Reconnect dryer electrically and power up.

h) Carry out the **BRING ONLINE INSTRUCTIONS** (**as detailed in Operating & Maintenance Instructions**).

APPENDIX A

A1 **PCB SCHEMATIC - DRG. NO. 003083700**

shows layout of control enclosure pcb, and details of cable terminations, for all **PNEUDRI electronic** dryers.

A2 **CONTACTOR BOX ASSEMBLY H/R**

shows layout of contactor box fitted to **PNEUDRI electronic** Heat Regenerative dryers.

A3 **H/R CONTROLLER SCHEMATIC - DRG. NO. 002086300**

shows wiring of contactor box fitted to **PNEUDRI electronic** Heat Regenerative dryers.

A4 **PIPING SCHEMATIC ELECTRONIC H/R - DRG. NO. 001074200**

shows pneumatic piping layout for **PNEUDRI electronic** Heat Regenerative dryers.

A5 **CONTACTOR BOX ASSEMBLY H/L**

shows layout of “contactor” box fitted to **PNEUDRI electronic** Heat less dryers.

A6 **H/L CONTROLLER SCHEMATIC - DRG. NO. 002092900**

shows wiring of “contactor” box fitted to **PNEUDRI electronic** Heatless dryers.

A7 **PIPING SCHEMATIC ELECTRONIC H/L - DRG. NO. 001077900**

shows pneumatic piping layout for **PNEUDRI electronic** Heatless dryers.

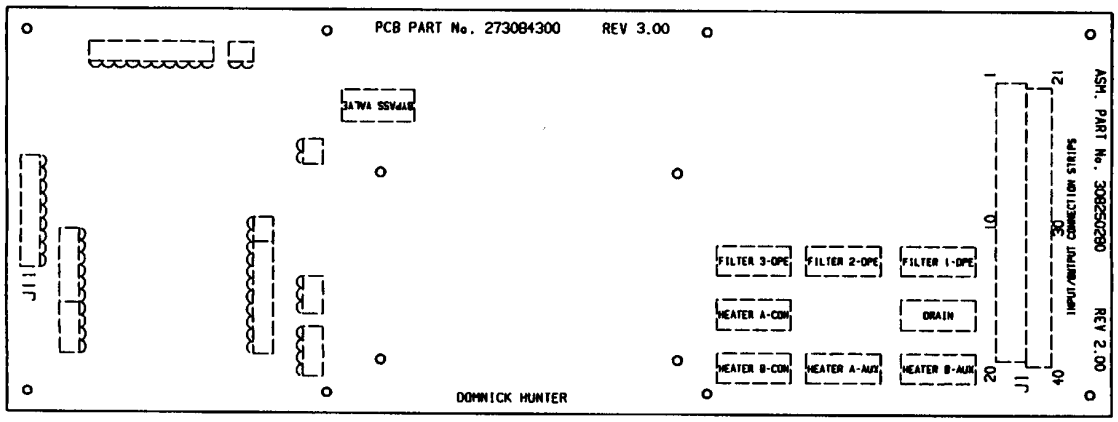
A8. **JUNCTION BOX ASSY. - DRG. NO. 458250439**

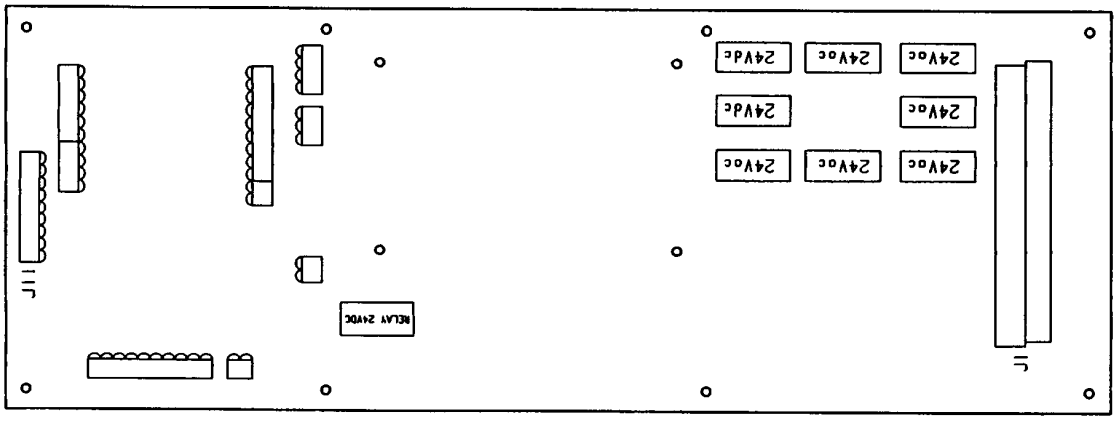
A1 PCB SCHEMATIC - DRG. NO. 003083700

PCB TERM'N	DESCRIPTION	COLOUR	OTHER TERMINATION	LENGTH (mm)	CABLE IDENTIFICATION
J1-1			NO CONNECTIONS		
J1-2					
J1-3					
J1-4	INLET PRESSURE TRANSDUCER -VE SUPPLY	RED			
J1-5	INLET PRESSURE TRANSDUCER - SIGNAL	GREEN	SEE PRESSURE SENSOR CABLE DRAWING NO. 273084500 FOR FURTHER DETAILS		
J1-6	INLET PRESSURE TRANSDUCER - EARTH	BLACK/YELLOW			
J1-7	INLET PRESSURE TRANSDUCER - COMMON	BLUE			
J1-8	SPARE ANALOGUE	N/A	N/A	N/A	
J1-9	SPARE ANALOGUE	N/A	N/A	N/A	
J1-10	INLET TEMPERATURE TRANSDUCER	RED	REAR JUNCTION BOX		
J1-11	INLET TEMPERATURE TRANSDUCER	BLUE	REAR JUNCTION BOX		
J1-12	DPE SUPPLY	GREEN	REAR JUNCTION BOX		
J1-13	DPE FILTER 3	YELLOW	REAR JUNCTION BOX		
J1-14	DPE FILTER 1	WHITE	REAR JUNCTION BOX		
J1-15	DPE FILTER 2	BLACK	REAR JUNCTION BOX		
J1-16	SPARE DIGITAL INPUT - COMMON	N/A	N/A	N/A	
J1-17	SPARE DIGITAL INPUT - 2	N/A	N/A	N/A	
J1-18	DRAIN FAULT	BROWN	REAR JUNCTION BOX		
◆ J1-19	HEATER B AUXILIARY	BLACK	CONTACTOR BOX 1	1000	1
◆ J1-20	HEATER A AUXILIARY	BLACK	CONTACTOR BOX 3	1000	3
J1-21	BYPASS VALVE - 24VAC	ORANGE	REAR JUNCTION BOX	N/A	
J1-22	BYPASS VALVE - NEUTRAL	VIOLET	REAR JUNCTION BOX	N/A	
J1-23	BYPASS VALVE - EARTH	N/A	N/A	N/A	
J1-24	SPARE EARTH	N/A	N/A	N/A	
J1-25	EXHAUST SOLENOID B - 24VAC	BROWN	SEE VALVE BLOCK DIAGRAM DRAWING NO. 27168300 FOR FURTHER DETAILS		
J1-26	EXHAUST SOLENOID B - NEUTRAL	BLUE			
J1-27	EXHAUST SOLENOID A - 24VAC	BROWN			
J1-28	EXHAUST SOLENOID A - NEUTRAL	BLUE			
J1-29	INLET SOLENOID B - 24VAC	BROWN			
J1-30	INLET SOLENOID B - NEUTRAL	BLUE			
J1-31	INLET SOLENOID A - 24VAC	BROWN			
J1-32	INLET SOLENOID A - NEUTRAL	BLUE			
◆ J1-33	DK MIMIC - 24VAC	BLACK	CONTACTOR BOX A1	1000	A1
◆ J1-34	SUPPLY (CONTROL) - NEUTRAL	BLACK	CONTACTOR BOX 11	1000	11
◆ J1-35	SUPPLY (CONTROL) - 24 VAC	BLACK	CONTACTOR BOX 12	1000	12
◆ J1-36	SUPPLY - EARTH	BLACK	CONTACTOR BOX E	1000	E
◆ J1-37	SUPPLY (SWITCHING) - NEUTRAL	BLACK	CONTACTOR BOX 5	1000	5
◆ J1-38	SUPPLY (SWITCHING) - 24VAC	BLACK	CONTACTOR BOX 8	1000	8
◆ J1-39	HEATER B CONTACTOR COIL	BLACK	CONTACTOR BOX 4	1000	4
◆ J1-40	HEATER A CONTACTOR COIL	BLACK	CONTACTOR BOX 2	1000	2
J11-1	4-20mA SIGNAL	GREEN	SEE HYGROMETER SENSOR CABLE DRAWING NO. 278200747 FOR FURTHER DETAILS		
J11-2	SCREEN	NOT CONNECTED			
J11-3	20 VDC	RED			
J11-4	0 VDC	BLACK			
J11-5	KEY SWITCH	BLACK	KEY SWITCH ALREADY FITTED		
J11-6	KEY SWITCH	BLACK			
J11-7	RS485 - 1	BLACK	3 WAY MULTI - L	200	MARK L
J11-8	RS485 - SCREEN	BLACK	3 WAY MULTI - E	200	MARK E
J11-9	RS485 - 2	BLACK	3 WAY MULTI - N	200	MARK N

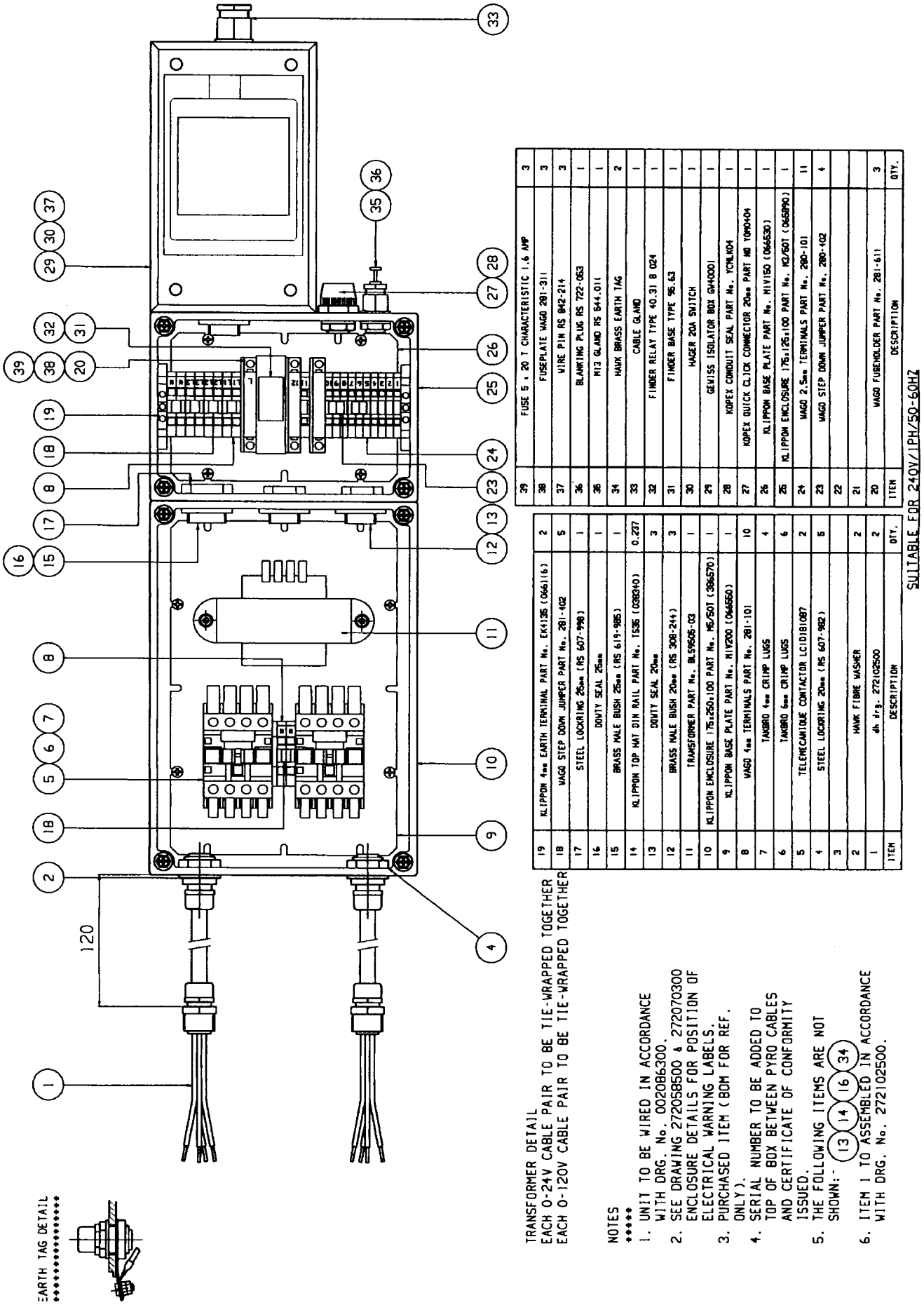
dh PRODUCTION NOTE : HEATLESS DRYERS ONLY.
PRIOR TO ASSEMBLY, REMOVE CABLES IDENTIFIED AS 1, 3 & 4

NOTES
*****
1. PURCHASED ITEM (BOM FOR REF.ONLY).
2. LATEST REVISION NUMBER TO APPEAR ALONGSIDE PART NUMBERS 308250280 AND 273084300 ON ONE SIDE OF CARD AS SHOWN.
3. REVISION NUMBERS ASSIGNED TO 308250280 & DRG 003083700 SHOULD ALWAYS AGREE.
4. CABLE IDENTIFICATION ON BOTH ENDS.
5. NUMBER STRIPS TO BE FITTED TO BOTH PARTS OF CONNECTORS 1.◆.
   BOTH FIXED AND DEMOUNTABLE PARTS. INPUT/OUTPUT CONNECTION STRIPS TO BE PURCHASED FROM PHEONIX:-
   No's 1-10 - REF : SK5.08/3.8:1-10
   No's 11-20 - REF : SK5.08/3.8:11-20
   No's 21-30 - REF : SK5.08/3.8:21-30
   No's 31-40 - REF : SK5.08/3.8:31-40
◆ SUPPLY WITH PCB. CABLE SPEC. TRI-RATED (E.G. RS PART NO. 364-253)
◆◆ SUPPLY WITH PCB. CABLE SPEC. TRI-RATED(EARTH) - (RS PART NO. 364-310)





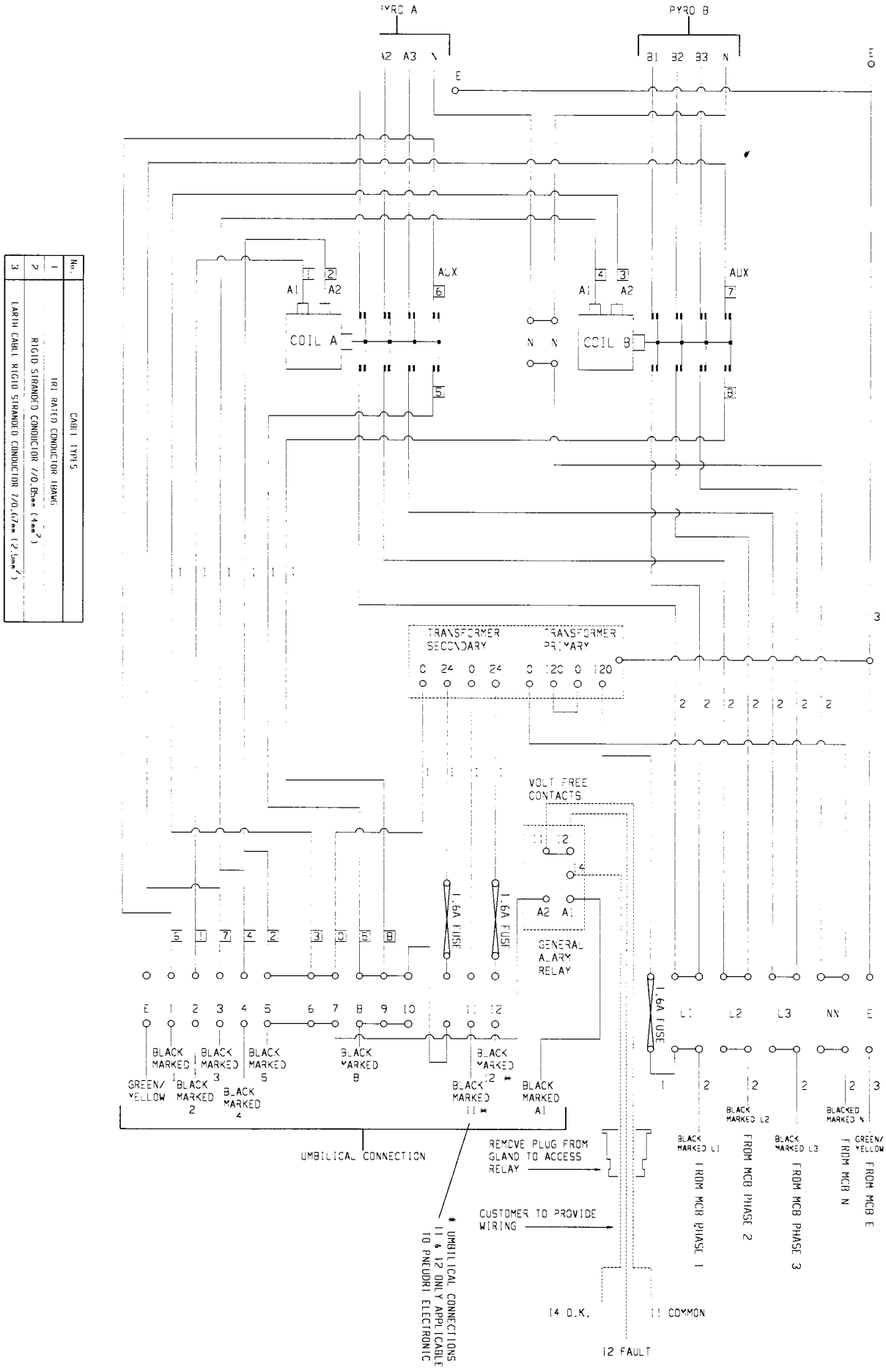
A2 CONTACTOR BOX ASSEMBLY



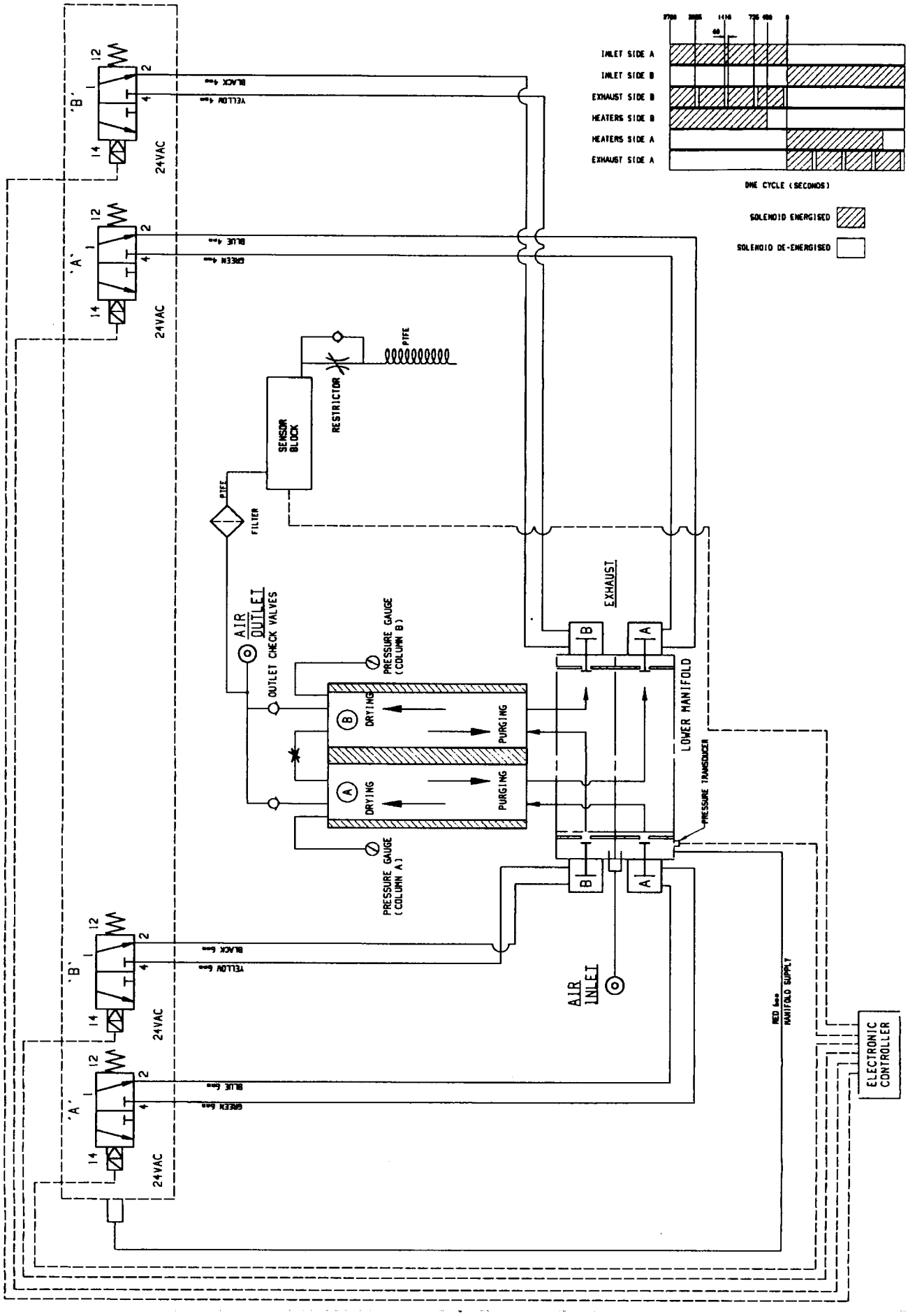
ITEM	DESCRIPTION	QTY.
1	dh drg. 272102500	2
2	HAWK FIBRE WASHER	2
3		
4	STEEL LOCKRING 20mm (RS 607-982)	5
5	TELEMECANIQUE CONTACTOR LC1D18087	2
6	TANBRO 6mm CRIMP LUGS	6
7	TANBRO 4mm CRIMP LUGS	4
8	WAGO 4mm TERMINALS PART No. 281-101	10
9	KLIPPON BASE PLATE PART No. MIY200 (066550)	1
10	KLIPPON ENCLOSURE 175x250x100 PART No. MG/501 (386570)	1
11	TRANSFORMER PART No. BL59506-03	1
12	BRASS MALE BUSH 20mm (RS 308-244)	3
13	DONTY SEAL 20mm	3
14	KLIPPON TOP HAT DIN RAIL PART No. TS35 (038340)	0.237
15	BRASS MALE BUSH 25mm (RS 619-985)	1
16	DONTY SEAL 25mm	1
17	STEEL LOCKRING 25mm (RS 607-998)	1
18	WAGO STEP DOWN JUMPER PART No. 281-102	5
19	KLIPPON 4mm EARTH TERMINAL PART No. EK4135 (066116)	2

ITEM	DESCRIPTION	QTY.
20	WAGO FUSEHOLDER PART No. 281-611	3
21		
22		
23	WAGO STEP DOWN JUMPER PART No. 280-102	4
24	WAGO 2.5mm TERMINALS PART No. 280-101	11
25	KLIPPON ENCLOSURE 175x125x100 PART No. MG/501 (066890)	1
26	KLIPPON BASE PLATE PART No. MIY150 (066530)	1
27	KOPEX QUICK CLICK CONNECTOR 20mm PART NO YQK404	1
28	KOPEX CONDUIT SEAL PART No. YCNLK04	1
29	GEWISS ISOLATOR BOX GW44001	1
30	HAGER 20A SWITCH	1
31	FINDER BASE TYPE 95.63	1
32	FINDER RELAY TYPE 40.31 8 024	1
33	CABLE GLAND	1
34	HAWK BRASS EARTH TAG	2
35	M13 GLAND RS 544.011	1
36	BLANKING PLUG RS 722-053	1
37	WIRE PIN RS 842-214	3
38	FUSEPLATE WAGO 281-311	3
39	FUSE 5 x 20 T CHARACTERISTIC 1.6 AMP	3

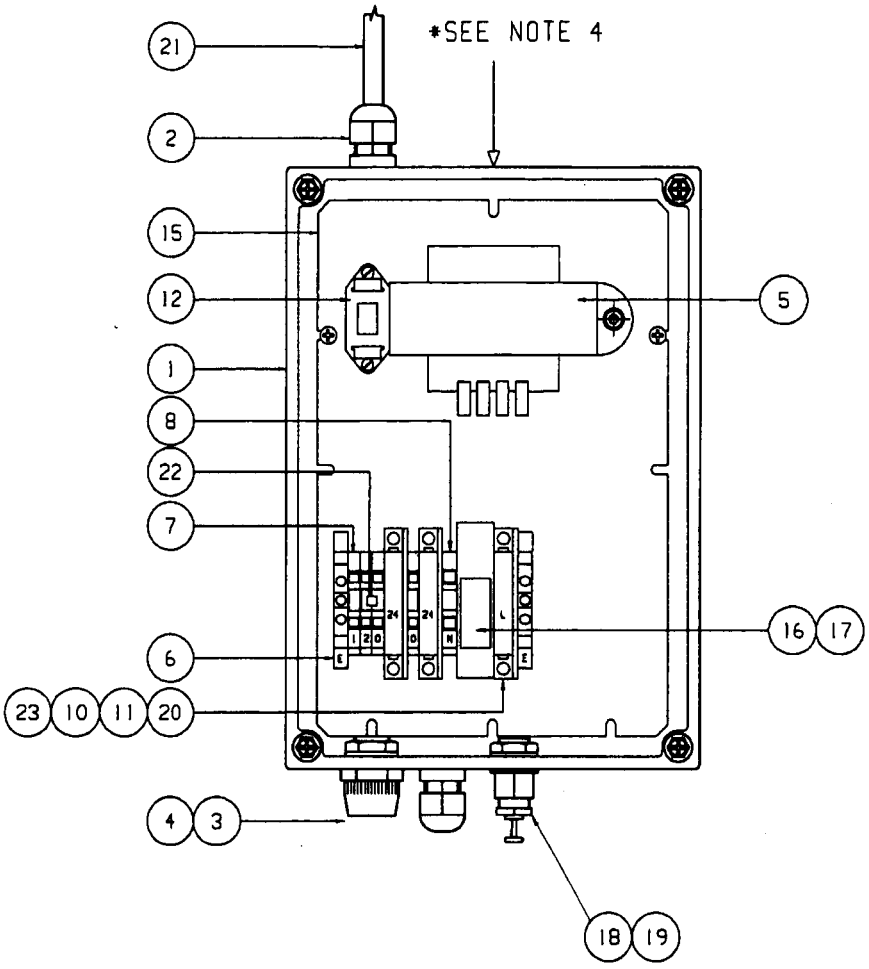
A3 H/R CONTROLLER SCHEMATIC - DRG. NO. 002070200



A4 PIPING SCHEMATIC ELECTRONIC H/R - DRG. NO. 001074200



A5 CONTACTOR BOX ASSEMBLY H/L



NOTES
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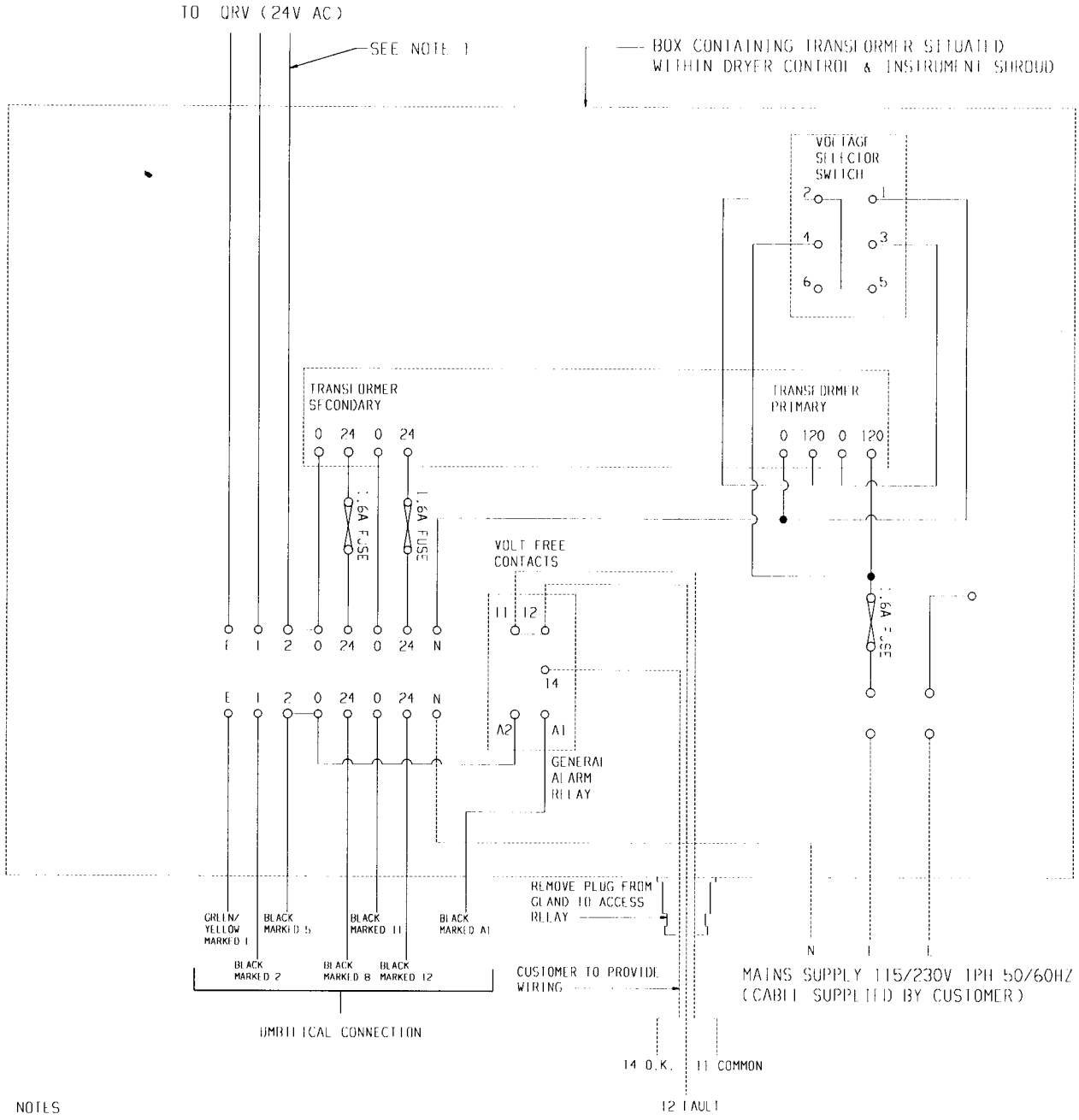
1. UNIT TO BE WIRED IN ACCORDANCE WITH DRG. No. 002090200.
2. SEE DRAWING 272073400 FOR CONTACTOR BOX DETAILS.
3. PURCHASED ITEM (BOM FOR REF. ONLY).
4. SERIAL NUMBER TO BE ADDED TO TOP OF BOX .SHOWN * AND CERTIFICATE OF CONFORMITY ISSUED.
5. THE FOLLOWING ITEMS ARE NOT SHOWN (13) (14)
6. SUITABLE ELECTRICAL WARNING LABEL TO BE FIXED TO THE LID.
7. VOLTAGE SWITCH TO BE SET AT 230V.

1.6A (23)

ITEM	DESCRIPTION	QTY.
23	1.6 AMP LABEL	3
22	WAGO SHORTING LINK 280-402	1.0
21	CABLE 3 CORE 0.75mm^2	1.0
20	FUSE 1.6A 'T' CHARACTERISTIC 5x20mm	3
19	BLANKING PLUG RS 722-053	1
18	M13 GLAND RS 544.011	1
17	FINDER RELAY TYPE 40.31 8 024	1
16	FINDER BASE TYPE 95.63	1
15	KLIPPON BASE PLATE PART NO. MIV200 (066550)	1
14	KLIPPON TOP HAT DIN RAIL PART No. TS35 (038340)	0.1
13	SPACER 30mm RS 222446	2
12	ARCOLECTRIC 115/230V SLIDE SWITCH	1
11	FUSEPLATE PART NO. 281-311	3
10	WAGO FUSEHOLDER PART No. 281-611	3
9		
8	WAGO 4mm TERMINALS PART No. 281-101	1
7	WAGO 2.5mm TERMINALS PART No. 280-101	4
6	KLIPPON 4mm EARTH TERMINAL PART No. EK4135 (066116)	2
5	TRANSFORMER (BLS 9805-03)	1
4	KOPEX CONDUIT SEAL PART No. YCMLK04	1
3	KOPEX QUICK CLICK CONNECTOR 20mm PART NO YOM0404	1
2	CABLE GLAND (PG9)	2
1	KLIPPON ENCLOSURE 175x250x100 PART No. MS/5OT (386570)	1

SUITABLE FOR 240V/1PH/50-60HZ (ALSO 110V/1PH/50-60HZ)

A6 H/L CONTROLLER SCHEMATIC - DRG. NO. 002092900

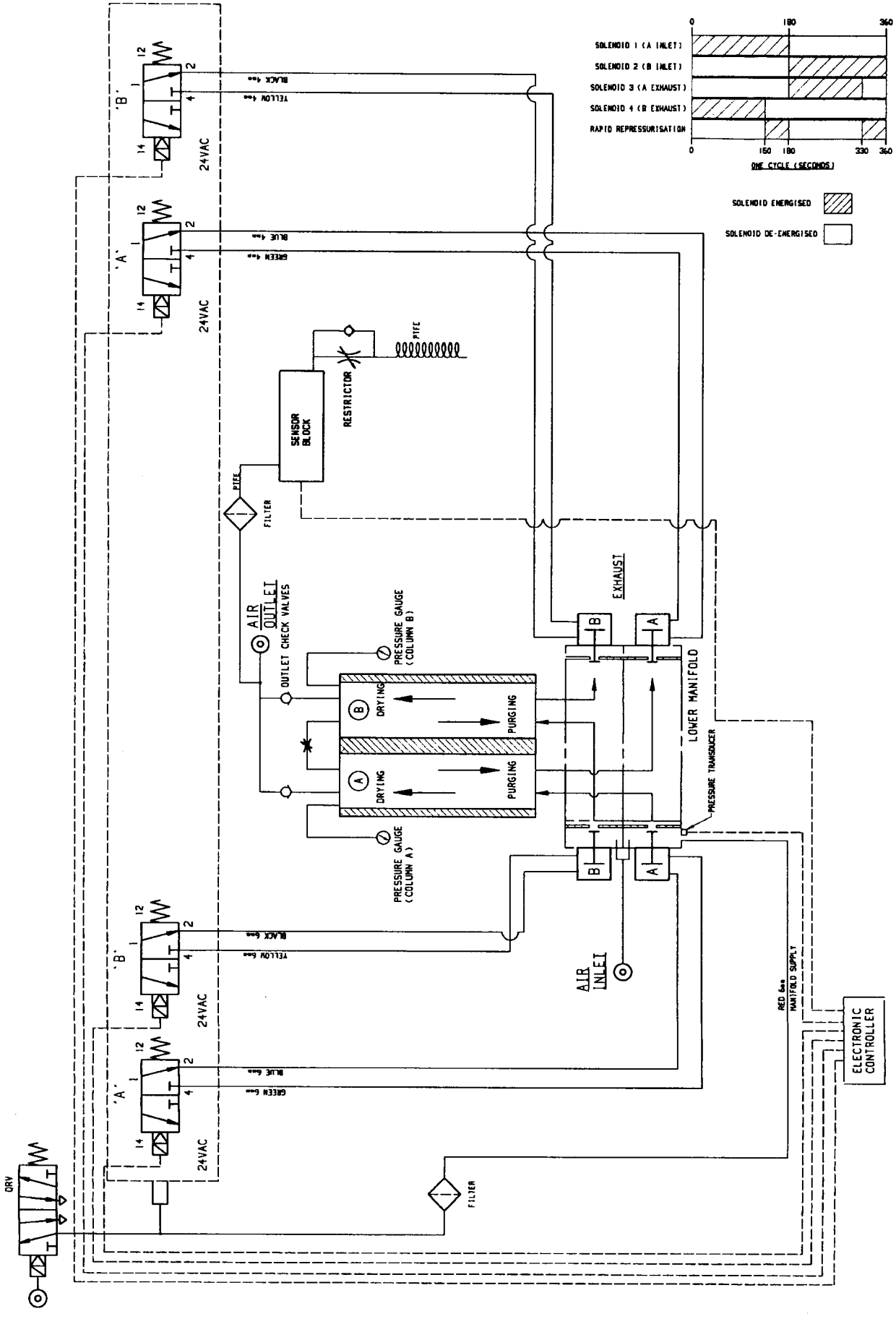


NOTES

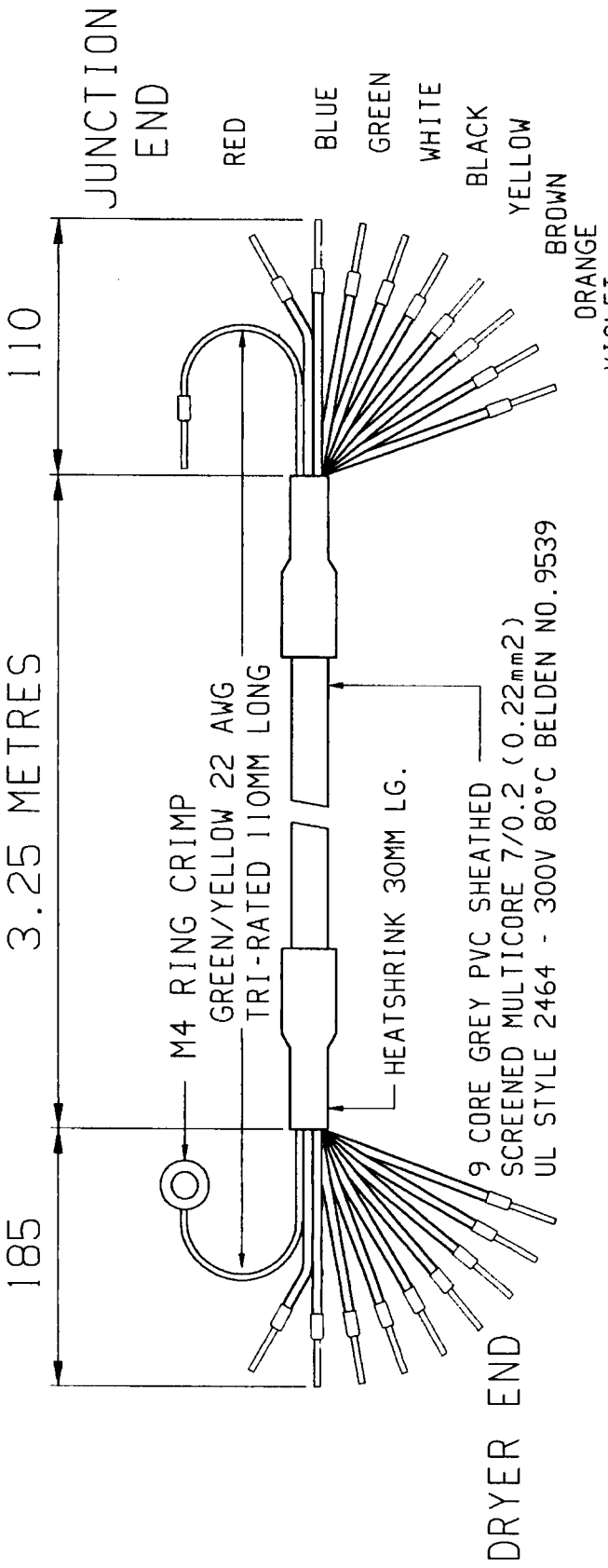
1) CABLE TO ORV TO BE 3 CORE UL/VDE GREY 0.75mm² OR 3 CORE 0.75mm² HARMONISED CABLE.

2) ALL INTERNAL CONNECTOR BOX WIRES TO BE 1.0mm² TRI RATED.

A7 PIPING SCHEMATIC ELECTRONIC H/L- DRG. NO. 001077900



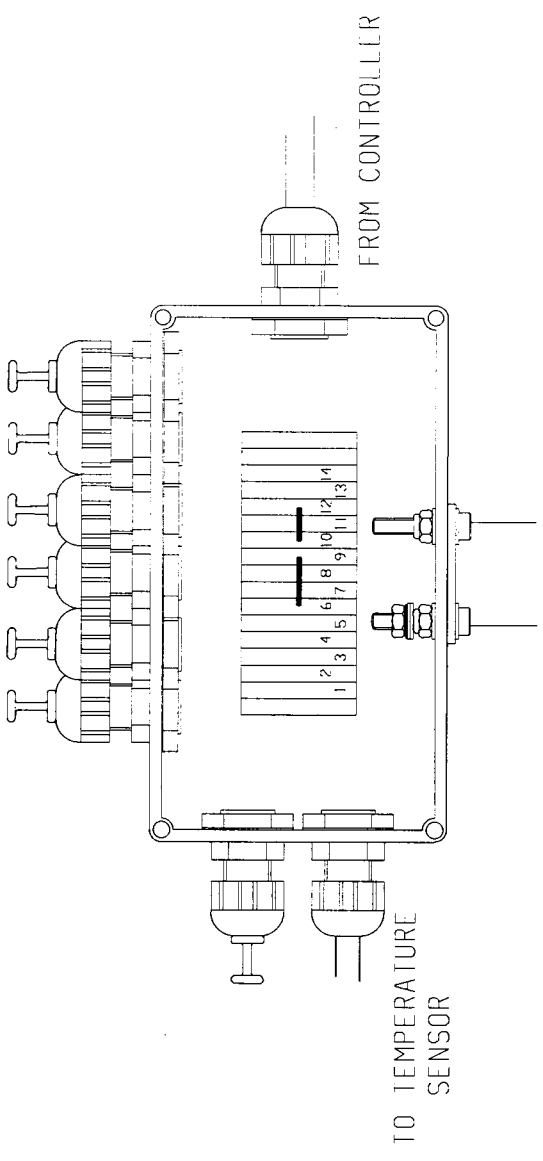
A8 JUNCTION BOX ASSEMBLY VERSION 3.3 - DRG. NO. 274193800



DRYER END	COLOUR	JUNCTION END	dh REF
10	RED	1	TEMP SENSOR +VE
11	BLUE	2	TEMP SENSOR -VE
12	GREEN	6	24VAC SUPPLY
14	WHITE	3	DPE1 FEEDBACK
15	BLACK	4	DPE2 FEEDBACK
13	YELLOW	5	DPE3 FEEDBACK
18	BROWN	10	DRAIN FEEDBACK
21	ORANGE	14	ABV 24Vac
22	VIOLET	13	ABV NEUTRAL

IMPORTANT :
INDIVIDUAL CORES MUST BE TERMINATED WITH
BOOTLACE FERRULES VIOLET RS 157-1216 AS SHOWN.

A9 WIRING DIAGRAM JJUNCTION BOX - DRAWING NO. 008200019



BOTTOM		TERMINAL	TOP
RED	FROM CONTROLLER	1	TEMPERATURE TRANSDUCER RED
BLUE	FROM CONTROLLER	2	TEMPERATURE TRANSDUCER BLUE/BLACK
WHITE	FROM CONTROLLER	3	DPE1 FEEDBACK
BLACK	FROM CONTROLLER	4	DPE2 FEEDBACK
YELLOW	FROM CONTROLLER	5	DPE3 FEEDBACK
GREEN	FROM CONTROLLER	6	
WS DRAIN SUPPLY		7	DPE1 SUPPLY
AO DRAIN SUPPLY		8	DPE2 SUPPLY
AA DRAIN SUPPLY		9	DPE3 SUPPLY
BROWN	FROM CONTROLLER	10	WS DRAIN FEEDBACK
		11	AO DRAIN FEEDBACK
		12	AA DRAIN FEEDBACK
VIOLET	FROM CONTROLLER	13	ABV NEUTRAL
ORANGE	FROM CONTROLLER	14	ABV 24VAC

NOTES

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