



**HANDBOOK FOR PAC60/HEX60,  
THREE PHASE 400V 50Hz**

**CAUTION**

**PLEASE READ THIS LEAFLET CAREFULLY**

1. DO NOT APPLY MAINS WATER PRESSURE TO PAC UNITS. ACCESS TO THE FILLING POINT FOR THE WATER CIRCULATING SYSTEM IS IN THE TOP OF THE HEAT EXCHANGER UNIT.
2. WHEN REMOVING A PAC UNIT FROM AN INSTALLATION DISCONNECT WATER QUICK COUPLINGS AT ROOM UNIT FIRST.

**INTERNAL ACCESS SHOULD BE RESTRICTED TO ANDREWS TRAINED STAFF ONLY.**



## 1)HEALTH & SAFETY AT WORK ACT 1974

Under section 6 of the above Act, it is the duty of the manufacturers and suppliers of the products for use at work to ensure, so far it is reasonably practicable, that such products are safe without risk to health when properly used and to make available to users of such products adequate information about their safe and proper operation.

Air conditioners should only be used in the manner and purpose for which they were intended and in accordance with the recommendations detailed in this leaflet. Our air conditioners have been designed, produced and inspected with safety in mind, but there are certain basic precautions which should be taken by the user and in particular attention is drawn to the safety precaution in this leaflet.

It is imperative, therefore, that all persons who may make use of our equipment have all the information and instructions they require to ensure that they are fully aware of any hazards, and that they know both the purpose and the correct manner of the use of the equipment.

### GENERAL SAFETY

This equipment should only be operated by a competent adult who has read and understood these instructions.

Never operate this equipment if you are ill, feeling tired or under the influence of alcohol or drugs.

Never put anything on top of the unit or block the air inlets or outlets.

Make sure equipment is switched off and unplugged after use.

Check condition of equipment before use. If unit is showing signs of damage contact your supplier immediately.

## WARNINGS !

\*This unit **MUST** be transported and operated in the upright position at all times.

\*Do not operate this equipment if it has missing, damaged, insecure guards or electrical components.

\*Ensure equipment is sited on firm level ground.

\*Locate away from any possible unauthorised interference.

\*Ensure electrical supplies are of adequate capacity.

\*The user must not undertake any service or repair of equipment.

\*Ensure debris or detritus cannot be drawn into the outdoor unit fan's airflow.

ANY DOUBT CONCERNING  
APPLICATION / INSTALLATION  
CONSULT YOUR SUPPLIER.

## 2)INSTALLATION.

### ELECTRICAL SUPPLY

All electrical installations must comply with current IEE regulations.

As standard, this unit requires a 25 Amp fused electrical supply rated at 400Volts, ~3N, 50Hz.

The unit will operate from a 32A, 3 phase wall socket.

Do not run umbilical in lying water.

Do not disconnect plugs until the mains supply has been isolated.

Ensure floor surface is adequate for the weight.

Ensure the outdoor unit (hex) is safely located on a level surface with the wheels locked, away from possible unauthorised interference.

### 3) SYSTEM DESCRIPTION.

The system comprises a room unit cooling section, an external heat exchanger and the two are interconnected by means of a flow and return water pipe and an electrical supply to the heat exchanger fan. The room unit is fitted with an automatic condensate disposal pump which discharges the condensate via a small plastic **pipe into the base of the external heat exchanger**. This pipe and all interconnecting pipes and electrics are secured together. In addition, both ends of each pipe are fitted with "quick connect" couplings that open on coupling but reseal to become water tight on disconnect.

### 4) AIR FLOW

The angled air outlets at the top of the standard room unit are fitted with air grilles that allow the angle of air outlet to be adjusted vertically and horizontally and, in conjunction with the fan speed control switch, the air velocity and direction can be carefully set up to obtain maximum coverage of the area being cooled without causing drafts. Care should be taken to avoid outlet air being obstructed as this will cause **the air to "eddy" around the unit** resulting in recirculation and short/inaccurate cycling of the machine. Ideally, cold air should be directed to create a "blanket" all across the ceiling area allowing natural convection to drop the air over the whole area at very low velocity.

### 5) SITING

#### ROOM UNIT.

Ideally, the room unit should be positioned equidistant along the shortest wall in the room blowing down the length of the room. If there is more than one unit in the same area, then they would normally be positioned side by side, and **equidistant along the long wall**, all pointing in the same direction. Sometimes it may be necessary to position units around the perimeter of an area but, in this case, **great care should be taken to avoid** one unit blowing cold air straight into another which will adversely affect the machine operation. Good and correct air flow is, perhaps, the single most important aspect of satisfactorily applying portable air conditioners. If in doubt seek the advice of your supplier.

#### HEAT EXCHANGER

The heat exchanger must stand external to the area being cooled and, preferably, in the outside atmosphere. It can stand freely on a flat surface. The castor wheels should be locked to prevent the heat exchanger from moving.

## 6)CONDENSATE.

### PAC60BX

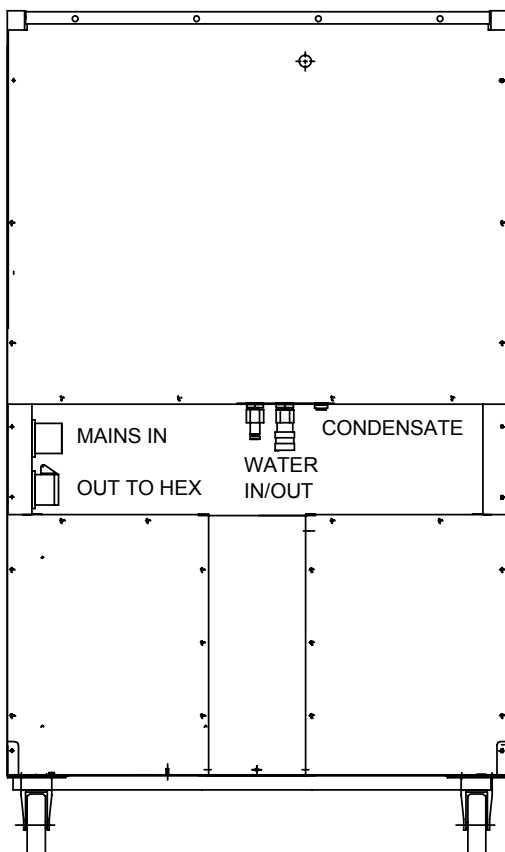
In operation, the room unit is constantly condensing water vapour out of the atmosphere (reducing relative humidity). This water has to be drained away. Two automatic condensate pumps are fitted inside the PAC60BX room unit. The flexible hose outlet from the condensate pumps runs to the outside inside the cable bundle. The condensate is deposited in the base of the heat exchanger, considerable re-evaporation of this water takes place on the warm air stream passing through and around the heat exchanger, but please remember that there will also be a degree of dripping through the base of the heat exchanger.

HAVE GREAT REGARD FOR THIS CHARACTERISTIC WHEN POSITIONING THE EXTERNAL HEAT EXCHANGER.

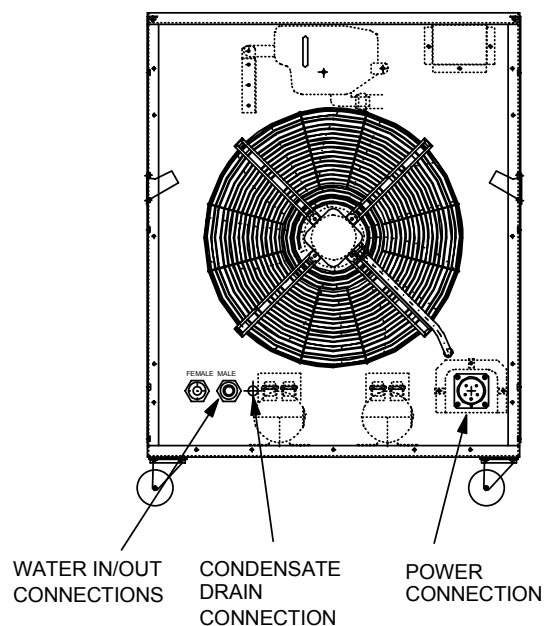
The flexible water pipes should be routed so as to avoid any unnecessary restrictions to the flow of water inside.

## 7) MACHINE LINK-UP FOR PAC60BX/

Ensure the mains supply lead to the room unit is disconnected. A 15m line set to connect all services between the room unit and the external heat exchanger will have been supplied. The water pipe connections are by means of "quick connect couplers". These are simple 'push-on" connectors which, when disconnected (after pulling back sprung loaded locking ring), re-seal the water system on either side. The complete system will have been filled with the necessary amount of water/antifreeze prior to its arrival on site. A water proof 5 pin quick connect electrical coupler (push fit with screw lock ring, hand tight only), and condensate drain pipe coupler 6mm clear polythene (push fit), should also be connected. Having made the couplings, the system is operational immediately.



PAC CONNECTIONS



HEAT EXCHANGER CONNECTIONS

## 8) WATER LEVELS

The water system in the room unit will be to the correct level when delivered.

However if for some reason the level has fallen, antifreeze (33%) and water will have to be added. The header tank filler and level indication is located in the external heat exchanger.

**Ensure the indoor unit is running in**

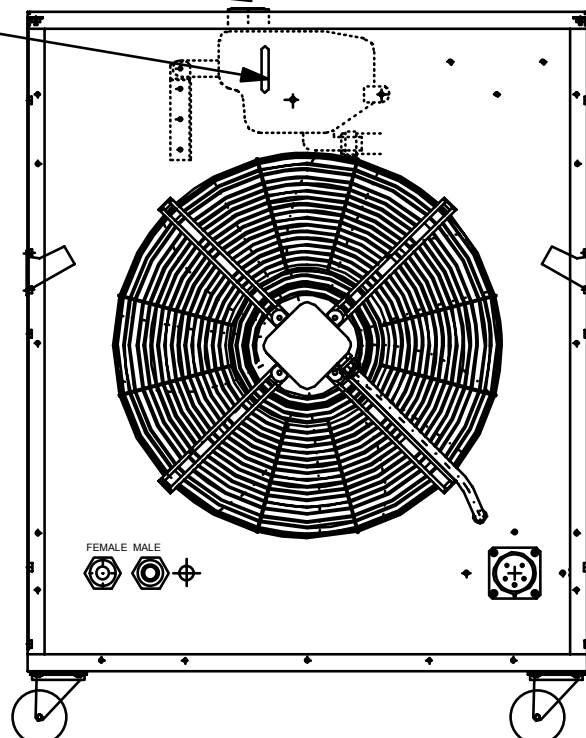
**cooling mode before removing the header tank cap, and as with all pressure caps, remove slowly.** It is recommended that a mixture, by volume, of one part antifreeze to **two parts** water is utilised, this will prevent freezing down to an external temperature of  $-20^{\circ}\text{C}/-5^{\circ}\text{F}$ ).

**DO NOT APPLY MAINS WATER PRESSURE TO THE SYSTEM**

FIG 2

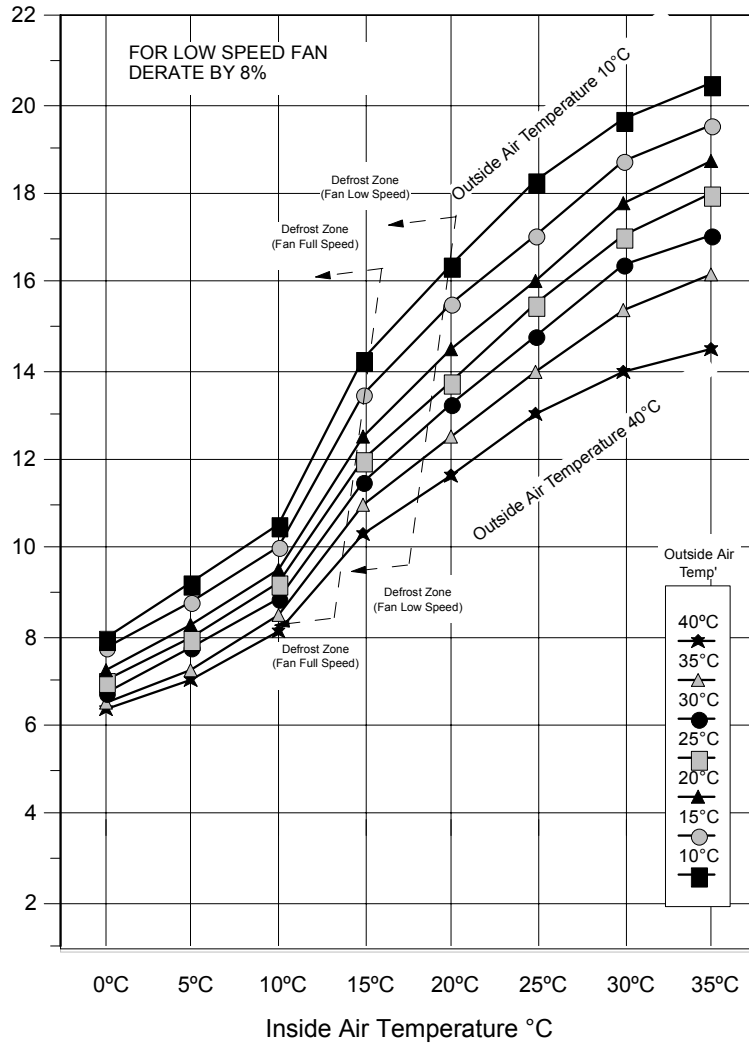
REMOVE LID HERE TO TOP UP SYSTEM WITH ANTIFREEZE

FLUID IN SUMP SHOULD BE VISIBLE THROUGH THIS APERTURE



9) DATA

**PERFORMANCE GRAPH PAC60 WATER COOLED UNIT**



DATA SHEET

	UNITS	ROOM UNIT	HEX UNIT
		400V 50Hz 3ph	
Electrical Data:			
FLA	Amps	17.00	
LRA	Amps	48.00	
Maximum Supply Fuse	Amps	25.00	
Nominal Power Consumed	Watts	5500	
Supply Voltage Limits	%	-10/+15	
Air Flow High/Low	m <sup>3</sup> /h	3500/2000	2700
Sound Level @ 3m	dbA	65	
Overall Dimensions			
Height (Unpacked)	mm	1610	1085
Width (Unpacked)	mm	1000	820
Depth (Unpacked)	mm	640	605
Weight (Wet)	kg	230	113

**GAS CHARGE**

The dehumidifier incorporates a hermetically sealed refeeding circuit containing less than 6kg of refrigerant. R407c Global warming potential (GWP) 1700.

DO NOT SCALE PRINT

B	BLUE
BL	BLACK
BR	BROWN
GR	GREY
O	ORANGE
P	PINK
R	RED
V	VIOLET
W	WHITE
GR/B	GREY/BLUE
G/R	GREEN/RED
G/Y	GREEN/YELLOW
O/BL	ORANGE/BLACK
R/B	RED/BLUE
R/BL	RED/BLACK
R/BR	RED/BROWN
W/BL	WHITE/BLACK
W/R	WHITE/RED

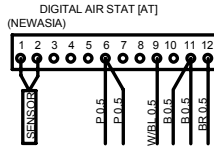
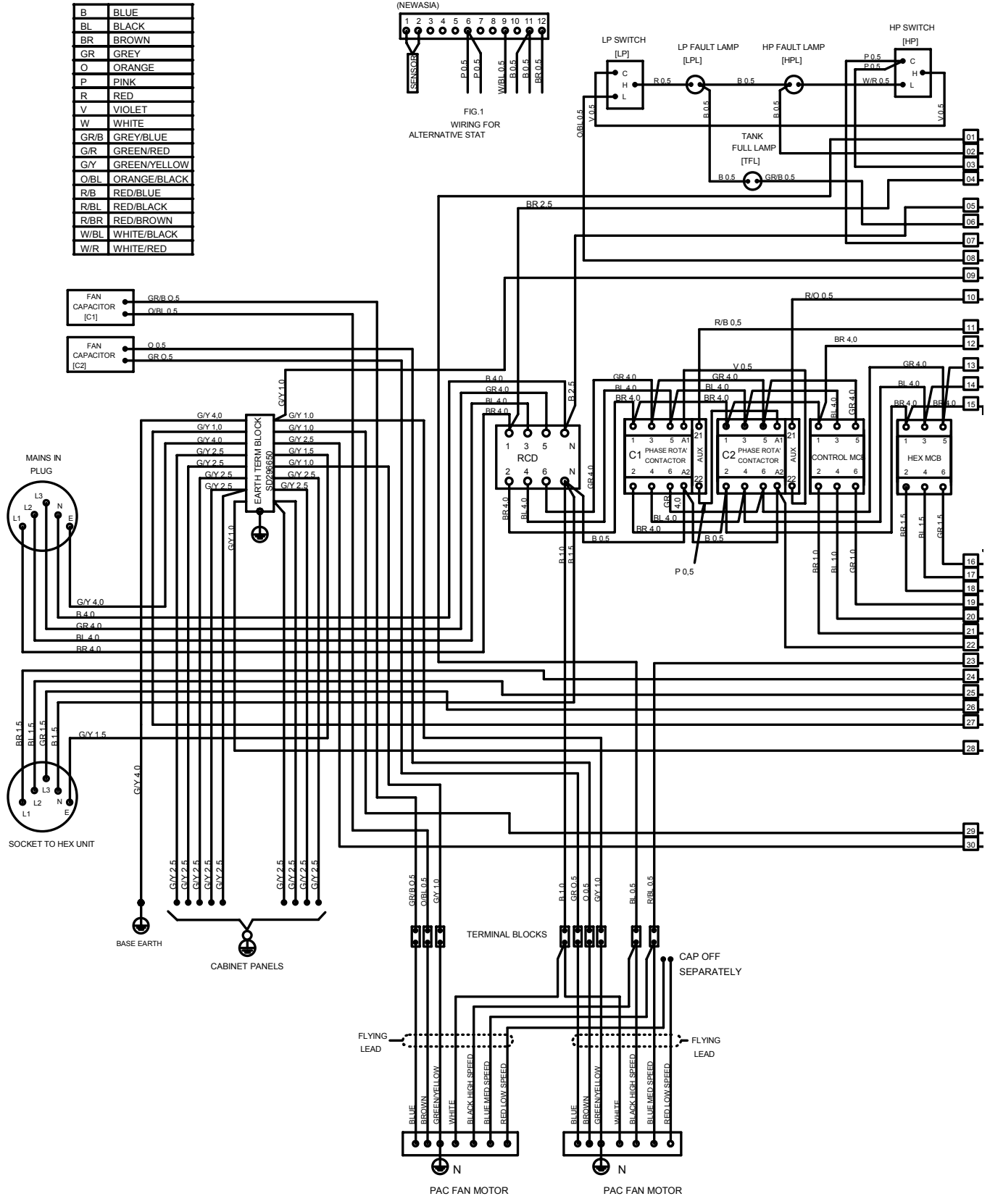


FIG.1  
WIRING FOR  
ALTERNATIVE STAT

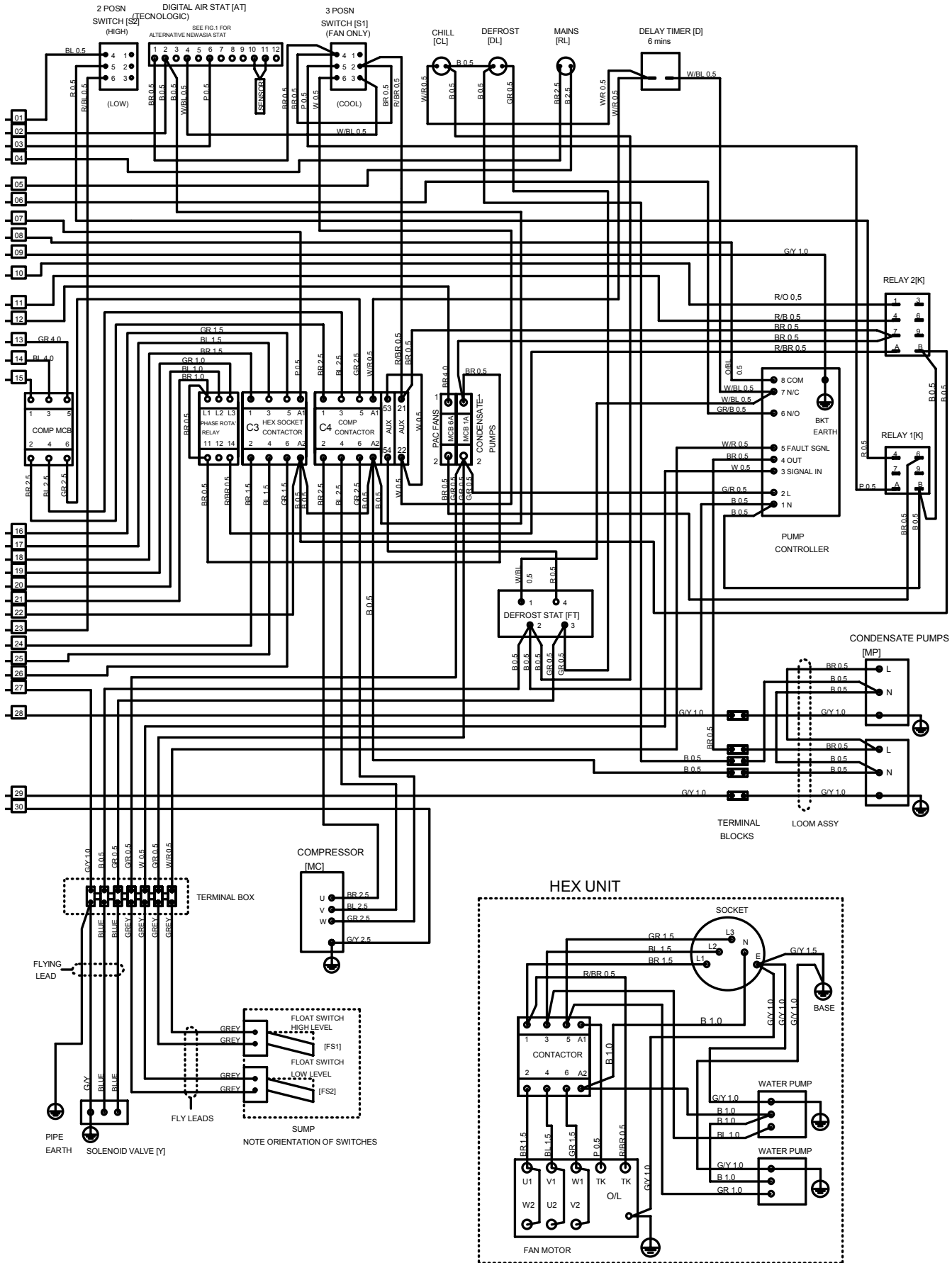


C	S3 SWITCH DELETED	GSM	24:02:11
B	PHASE ROTATION CONTACTORS ETC ADDED	GSM	25:01:11
A	AS DRAWN	GSM	20:12:10
ISS		C/N	APPD DATE
DRAWING CHANGE			

**colorex**  
CALOREX HEAT PUMPS LTD  
U.C.C.

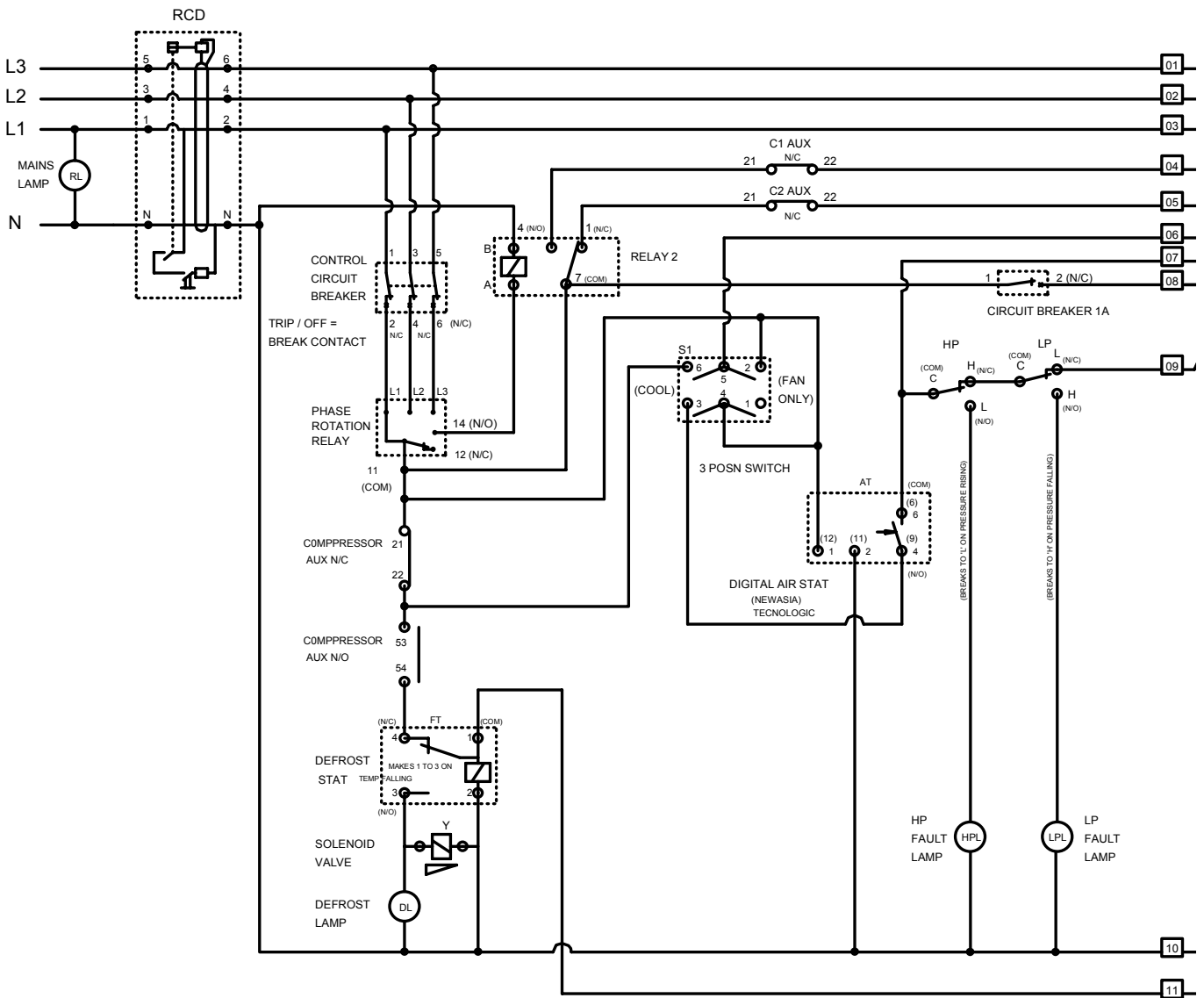
MATERIAL
FINISH



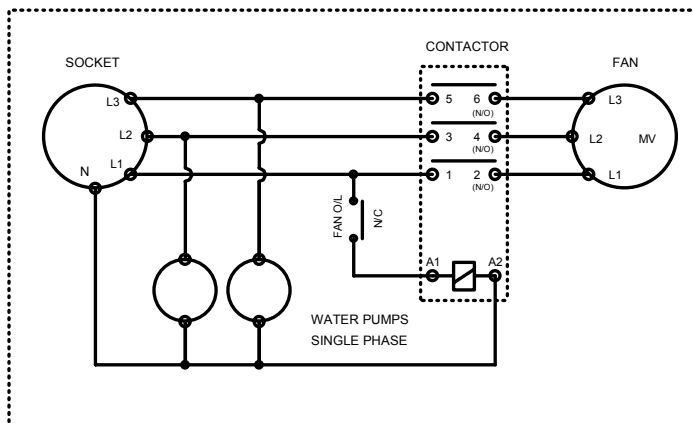


TOLERANCE UNLESS SPECIFIED		TITLE		SHT No.	CONT'	DRAWN	APPROVED	DATE	SCALE
HOLES TO BS 4500 E12		WIRING DIAGRAM		1	SH2 A1	GSM		10:10:10	NTS
INSPECTION LEVEL		PAC60 + HEX80		DRG No. D624950					
DIMS									

DO NOT SCALE PRINT



HEX UNIT

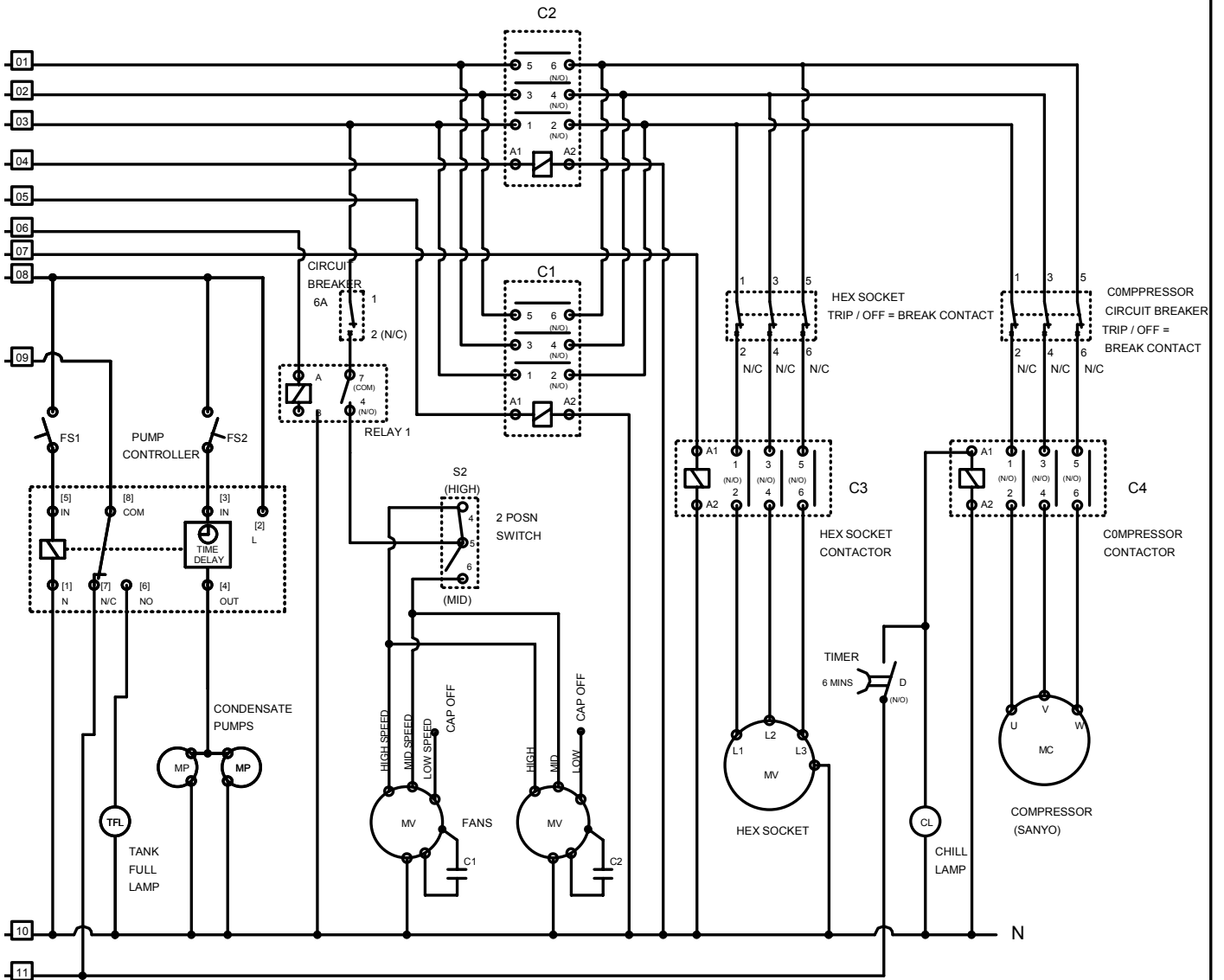


CIRCUIT BREAKER	OVERLOAD & SETTING
CONTROL	2.0A
COMPRESSOR	12.0A
HEX SOCKET	2.2A

ISS		C/N	APPD	DATE
DRAWING CHANGE				

**calorex**  
 CALOREX HEAT PUMPS LTD  
 U.C.C.

MATERIAL
FINISH



TFL	TANK FULL LAMP	LAMPE 'TANK VOLL'	VOYANT DE REMPLISSAGE DU BAC A CONDENSAT
FS1	FLOAT SWITCH HIGH LEVEL	SCHWIMMERSCHALTER HOHER STAND	INTERRUPTEUR A FLOTTEUR NIVEAU HAUT
FS2	FLOAT SWITCH LOW LEVEL	SCHWIMMERSCHALTER NIEDRIGER STAND	INTERRUPTEUR A FLOTTEUR NIVEAU BAS
DL	DEFROST LAMP	LAMPE 'ENTEISEN'	VOYANT DEGIVRAGE
CL	CHILL LAMP	LAMPE 'KUEHLEN'	VOYANT REFROIDISSEMENT
RL	MAINS (OR RUN) LAMP	LAMPE 'STROM EIN' ODER 'LAUF'	VOYANT SECTEUR (FONCTIONNEMENT)
HPL	HIGH PRESSURE FAULT LAMP	STORUNGSLAMPE 'HOCHDRUCK'	VOYANT SECURITE HAUTE PRESSION
LPL	LOW PRESSURE FAULT LAMP	STORUNGSLAMPE 'NIEDERDRUCK'	VOYANT SECURITE BASSE PRESSION
F1	CONTROL FUSE	KONTROLLSICHERUNG	FUSIBLE PRINCIPAL
F2	CONDENSATE FUSE	KONDENSATSICHERUNG	FUSIBLE CONDENSAT
B	CONTACTOR	SCHALTSCHUTZ	CONTACTEUR
FT	DEFROST THERMOSTAT	VEREISUNGSSCHUTZTHERMOSTAT	THERMOSTAT DE DEGIVRAGE
S1	FAN MODE SWITCH	GEBLASESCHALTER	SELECTEUR DE MODE DU VENTILATEUR
S2	FAN SPEED SWITCH	SCHALTER VENTILATORGESCHWINDIGKEIT	COMMUTATEUR VITESSE VENTILATEUR
HP	HIGH PRESSURE SWITCH	HOCHDRUCKSCHALTER	REINITIALISATION DEFAUT HAUTE PRESSION
LP	LOW PRESSURE SWITCH	NIEDERDRUCKSCHALTER	REINITIALISATION DEFAUT BASSE PRESSION
D	DELAY TIMER	VERZOGERUNGSRELAIS	TEMPORISATEUR
K	RELAY	RELAIS	RELAIS
MC	COMPRESSOR MOTOR	KOMPRESSORMOTOR	KOMPRESSEUR
MV	FAN MOTOR	VENTILATORMOTOR	MOTEUR DU VENTILATEUR
C1	COMPRESSOR CAPACITOR	KONDENSATOR KOMPRESSOR	KONDENSATEUR DU COMPRESSEUR
C2	FAN CAPACITOR	KONDENSATOR VENTILATOR	KONDENSATEUR DU VENTILATEUR
C3	HARD START CAPACITOR	HARTSTARTKONDENSATOR	KONDENSATEUR DEMARRAGE DIRECT
Y	SOLENOID VALVE	MAGNETVENTIL	VANNE ELECTROMAGNETIQUE
AT	AIR THERMOSTAT	LUFTTHERMOSTAT	THERMOSTAT AIR
MP	CONDENSATE PUMP	KONDENSATPUMPE	POMPE A CONDENSAT

TOLERANCE UNLESS SPECIFIED

HOLES TO BS 4500 E12

INSPECTION LEVEL

DIMS

TITLE

CIRCUIT DIAGRAM

PAC60 + HEX60

SHT No.

2

CONT'

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DRAWN

GSM

APPROVED

DATE

10:10:10

SCALE

NTS

DRG No. D624950

## 10) OPERATING INSTRUCTIONS.

The Control Panel on the room unit is illustrated below,

- a) Plug in the room unit mains cable, and switch on electricity, red mains light will illuminate.
- b) Select "Fan Only" with the mode switch. The fan will start.
- c) Select "Fan Speed", with the fan speed switch, high or low depending on air velocity required.
- d) Select "Cooling" with the mode switch.
- e) The PAC60 is fitted with a digital thermostat which is factory preset at 28°C. With the PAC set like this the PAC starts to cool at 29°C and will stop cooling at 28°C.

Changing the set point.

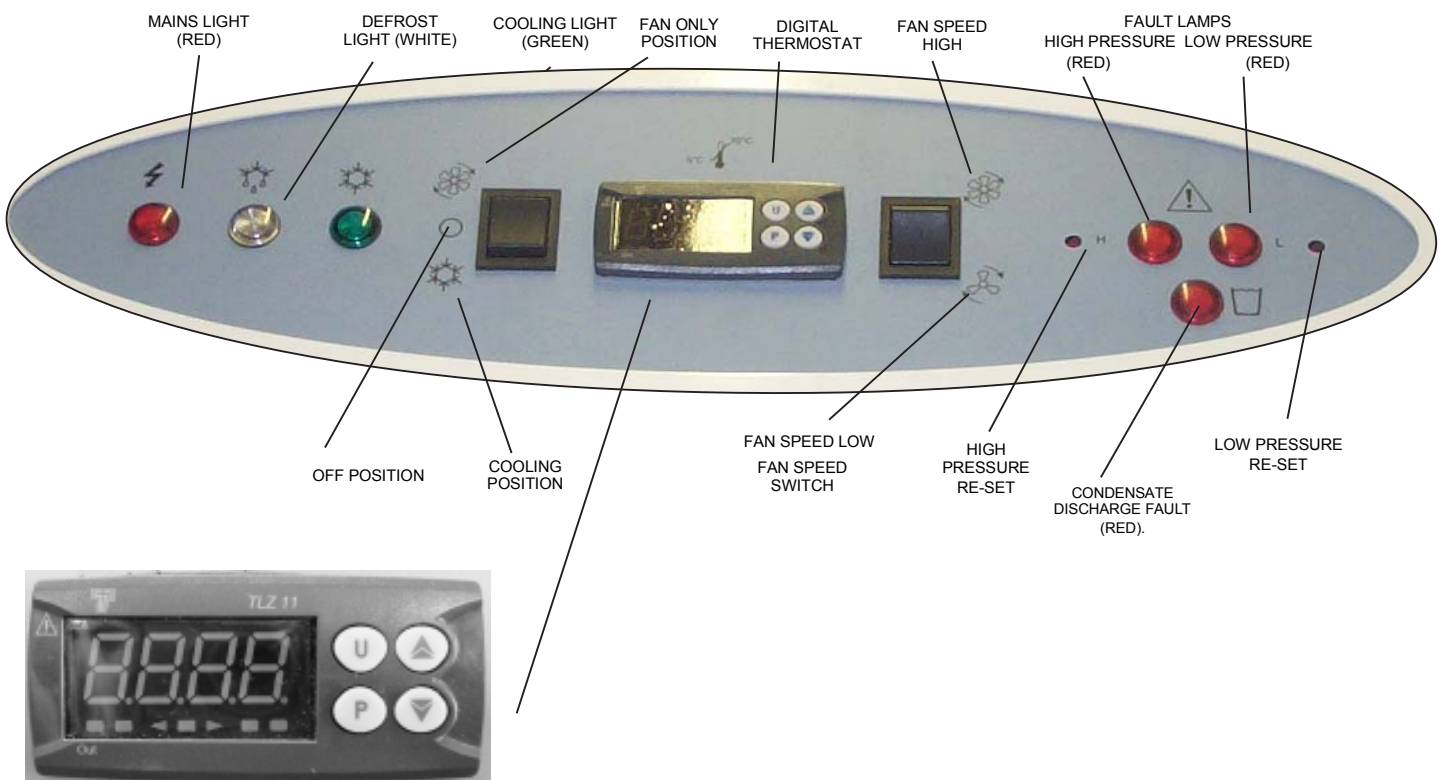
### Thermostat

Press P button once and release. Set Point and set point value (28) will be displayed alternately.

Press the ▲ or ▼ key to change the value of the set point. Once the desired value is displayed press P again to memorise the value. Cooling starts at 1°C above the new set point value and stops at the set point.

After a delay of 5 to 10 minutes the amber "Cooling" light will illuminate and the machine will proceed to cool the air.

FIG.3 CONSOLE LABEL/ MARKING



## 11) ROUTINE MAINTENANCE

The air filter must be kept clean, never allow to become choked with dust or dirt. If allowed to do so, the performance of the unit will become impaired, resulting in loss of air flow, freezing up of the evaporator coil and possible component damage.

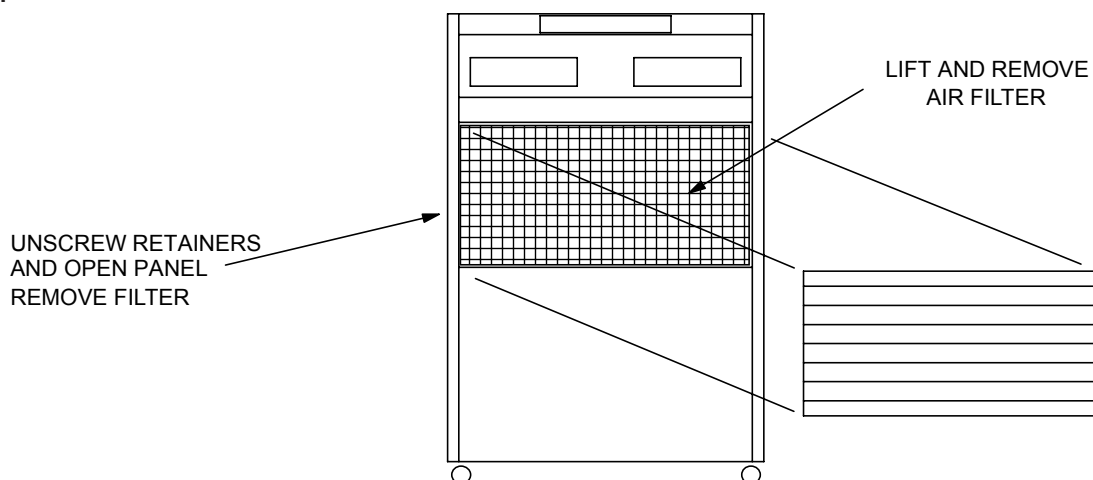
**PAC60BX** Lift out the return air grille on the front face of the unit, Fig 4. On refitting the filter ensure that it is correctly positioned covering the whole rear face of the grille. The filter (see Fig. 4) can be washed in warm, soapy water, rinsed and shaken dry before replacement. Frequency of cleaning depends upon application and can only be determined by the user. However, you should never allow more than two months to elapse between cleaning. The probable life of the filter will be about one year and spares are available from the supplier of the unit itself. Failure to have filter fitted during operation will cause serious damage.

The refrigeration circuit inside the room unit is fitted with a HIGH and a LOW pressure sensing switch. They are both manually resettable. A pencil or screwdriver with gentle pressure on the knob behind is all that is required to re-set.

Necessary access is provided via the control console of the PAC60BX.

**HOWEVER, DO NOT ATTEMPT TO RESET WITHOUT FIRST DISCOVERING WHY THE TRIP OCCURRED IN THE FIRST PLACE.**

FIG 4



## 12) MACHINE NOT WORKING?

**ONLY A COMPETENT ELECTRICIAN SHOULD ATTEMPT TO RECTIFY ELECTRICAL SUPPLY PROBLEMS. DO NOT REMOVE ANY PANELS FROM THE MACHINE.**

**Problem** - No air flow from room unit.

**Diagnosis** -Red "MAINS" light off.

**Cure** - Turn on electricity and/or check mains supply circuit breaker and the R.C.D situated in the electric box in the PAC 60BX unit.

**Problem** - No air flow from room unit.

**Diagnosis** - Red "MAINS" light on, White "DEFROST" light on.

**Cure** - Machine in defrost mode, do not adjust anything, machine will revert to normal run after 10 mins.

**Problem** - Insufficient air flow from room unit.

**Diagnosis** - Blocked air filter.

**Cure** - Clean filter

**Problem** - No cooling.

**Diagnosis** - Green "COOLING" light off.

**Cure** - Change value of set point on digital thermostat to a lower setting.

**Problem** - No cooling.

**Diagnosis** - Red "ATTENTION" Red High Pressure fault light illuminated. High pressure trip.

**Cure** - Press "+" button to re-set and check for :- Shortage of water ... top up.

External heat exchanger unit mounted in very high temperature?

Water frozen? Add glycol (33%).

External heat exchanger coil blocked with dirt.. clean.

**Problem** - No Cooling.

**Diagnosis** - Red "ATTENTION" Red Low Pressure fault light illuminated. Low pressure trip.

**Cure** - Press, "-" button to re-set and check for No air flow, blocked filter? Evaporator blocked with ice. Very low air temperature?

**Problem** - No cooling.

**Diagnosis** - Red Condensate discharge fault) light illuminated. High level condensate trip.

**Cure** - Condensate pump not reducing water level. Kink in condensate tube between room unit and external heat exchanger? Leak inside room unit. Sump filter located in heat exchanger unit blocked. Condensate tube frozen.

## 13 ERROR CODES ASSOCIATED WITH DIGITAL THERMOSTAT.

DISPLAY	ERROR	ACTION
E1 OR -E1	PROBE INTERRUPTED OR SHORT CIRCUIT	VERIFY CORRECT CONNECTION BETWEEN PROBE AND STAT, THEN VERIFY CORRECT FUNCTIONING OF PROBE.
EEPr	INTERNAL MEMORY ERROR	CHECK AND, IF NECESSARY REPROGRAMME THE PARAMETERS FUNCTION



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AIR TREATMENT DIVISION

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