

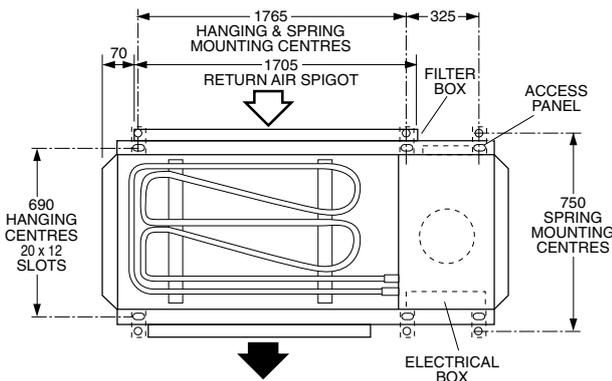
# HWP 440

## Ducted Water Cooled Packaged Air Conditioner

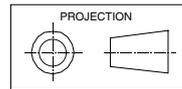
## Installation & Maintenance

Fig. 1

Not to Scale



Dimensions (mm)



Net Weight 349

**GENERAL**

- HWP\*C - Cooling only version
- HWP\*CE - Cooling version with electric heat
- HWP\*R - Reverse cycle version
- HWP\*RE - Reverse cycle version with electric heat
- HWP - A general designation which applies to all versions

These HWP units must be installed in accordance with all national and local safety codes.

**OPTIONS**

The following items are available as field fitted optional extras:

1. Filter
2. Optional Spring Mounting Kit
3. Condensate Lift-Pump Kit.

**INSTALLATION**

**Positioning & Mounting**

HWP units are designed to be used with simple, short duct layouts. Units should be located as close to the space to be air conditioned as acoustic criteria allows; refer to Fig.5 for application considerations.

When determining the position of the air conditioner, allow adequate space around the unit to facilitate future servicing and maintenance. Ensure there is enough working space in front of the electrical access panel. Allow adequate clearance for the filter (optional) to be withdrawn to its full length.

**It is recommended that the unit be mounted using the spring mounting system, supplied as an optional extra (Fig.2). This system minimises transfer of vibration into the building structure.**

If a more rigid installation can be tolerated, then suspend the unit from four threaded rods (not supplied) and secure using locknuts, as shown in Fig.3.

Mount the unit level as it comes with a sloping drain tray. The preferred placement of the reversible drain tray is for the drain pipe to be at the opposite end to the compressor.

**Positioning & Mounting (cont'd)**

The unit must be mounted with sufficient height for the condensate drain to be 'U' trapped outside the unit (see figure 4). Alternatively fit a condensate lift-pump.

If a condensate lift-pump is fitted, the drain exit can only be at the opposite end to the compressor. The drain line must not be piped to a level above the drain tray.

When finally positioned, tighten the lock nuts on the mounting rods, from above the mounting flange and below the reinforcing plates, to give a firm installation (see Fig. 3).

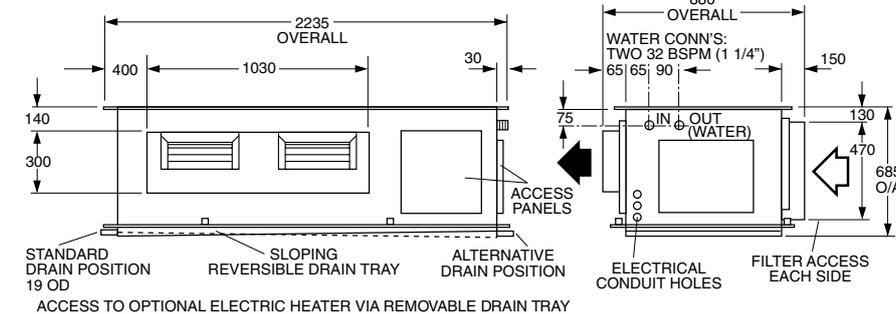


Fig. 2 Spring Mounting

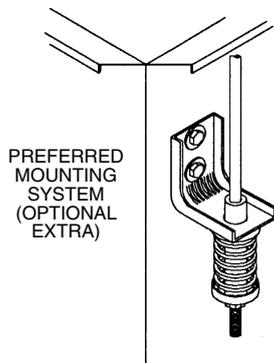


Fig. 3 Solid Mounting

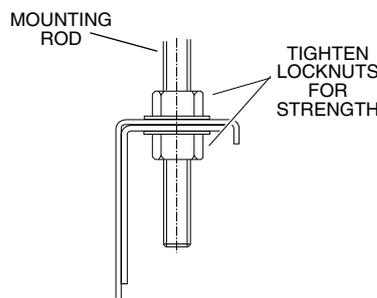
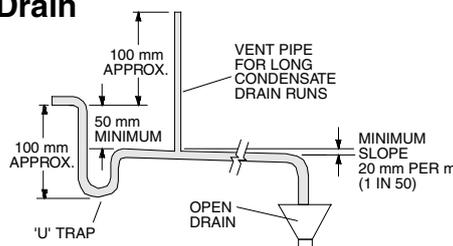


Fig. 4 Condensate Drain



### Condensate Drain

The drain line must be maintained at least 19 mm ID along its full length. A vent pipe is recommended for drain pipes longer than 4 m (refer figure 4). Check drain by pouring water into the drain tray and ensuring that it clears. Failure to adhere to these instructions could cause flooding.

### Water Supply & Return

The HWP unit's IN and OUT water connections are male pipe threaded (refer Fig. 1).

The HWP unit alone, excluding hoses, will withstand 2760 kPa (400 psi).

Poor quality water supply must be pre-filtered and it is essential that adequate water treatment is maintained, particularly where open cooling towers are used.

**Note:** It is required that the water supply system be fitted with a water flow switch and water pump safety interlock. These items prevent HWP units in the same water circuit from going into fail safe lockout status due to a loss of water flow. Failure to install the above items would require the resetting of all HWP units in the system - either by breaking the power supply to each unit or breaking the thermostat control circuit.

HWP\*R units require a minimum water supply temperature of 17°C.

### Circuit Balancing Valve

It is recommended that a circuit balancing valve be fitted to both HWP\*C and HWP\*R versions to maintain water flow at a constant rate. The nominal (minimum) water flow rates is 2 litres per second.

### Water Regulating Valve

#### (HW\*C versions only)

If a head pressure controlled water regulating valve is to be used instead of a circuit balancing valve, proceed as follows:

1. Attach your water regulating valve to the HWP unit's water OUT connection. A hole is provided alongside for you to pass your valve's connection tube through to the compressor compartment.

2. Remove the HP switch in the compressor compartment from its connection point and put a Schrader tee joint in its place.
3. Attach your water regulating valve's connection tube and the HP switch to the Schrader tee joint.
4. Adjust the valve's hand control until the outer surface temperature at the middle of the condenser reads 40°C, refrigerant condensing temperature.

### Electrical

The air conditioner should be connected to the appropriate power supply, as specified in the wiring diagram, with neutral and adequate earth. The supply to have an accessible switch to allow isolation of the unit. Wire the heating and cooling room thermostat to the electrical terminals adhering to the wiring diagram supplied with the unit. All wiring to the air conditioner must comply with the wiring regulations of the local electrical authority.

**Important:** Units are fitted with directional scroll compressors. At start-up check for correct rotation. If rotation incorrect, compressor will not pump, be noisy and draw minimal current. To correct rotation change phasing at main power terminal.

### Air / Water Flow

Refer to HWP Technical Data pamphlets for detailed information on air handling performance and water flow rates.

### Unit Protection

Units are fitted with a high and low pressure lockout protection. These will protect the unit in the event of either water flow failure in cooling mode, fan failure in heating mode, or a loss of refrigerant.

Units include a 6 min. anti rapid cycle timer for compressor on/off protection.

HWP\*R units also have a low refrigerant temp. safety thermostat as part of the lockout protection to prevent icing up of the water within the unit's condenser on heating mode. A pump/ flow verification relay protects individual units from a loss of water flow.

**Note:** Lockout protection can be reset by switching unit's power supply off and on. Lockout protection will also reset when the thermostat switches, or is switched to the dead zone.

Units supplied with electric heat include both auto (90°C) and manual (120°C) high temp. safety thermostats. If the manual safety t/stat requires resetting, then the auto safety t/stat has failed and needs to be replaced.

### Room Thermostat

The thermostat should be set within the recommended operating range of between 19°C and 30°C. The thermostat should not be used as an on-off switch. Refer to **temperzone** for a list of approved thermostats.

### MAINTENANCE

#### Quarterly

1. Remove lint and dust accumulation from heat exchange air coil. (Note: failure to do this may affect efficiency).
2. Check air filters (if fitted) and vacuum or wash clean as necessary.
3. Check condensate drain for free drainage.
4. Check compressor compartment for oil stains indicating refrigerant leaks.
5. Check quality of water supply.

#### Six Monthly

Replace air filter to maintain adequate air flow and efficiency.

This pamphlet replaces the previous issue no. 2619 dated 09/06. Wiring revision F.

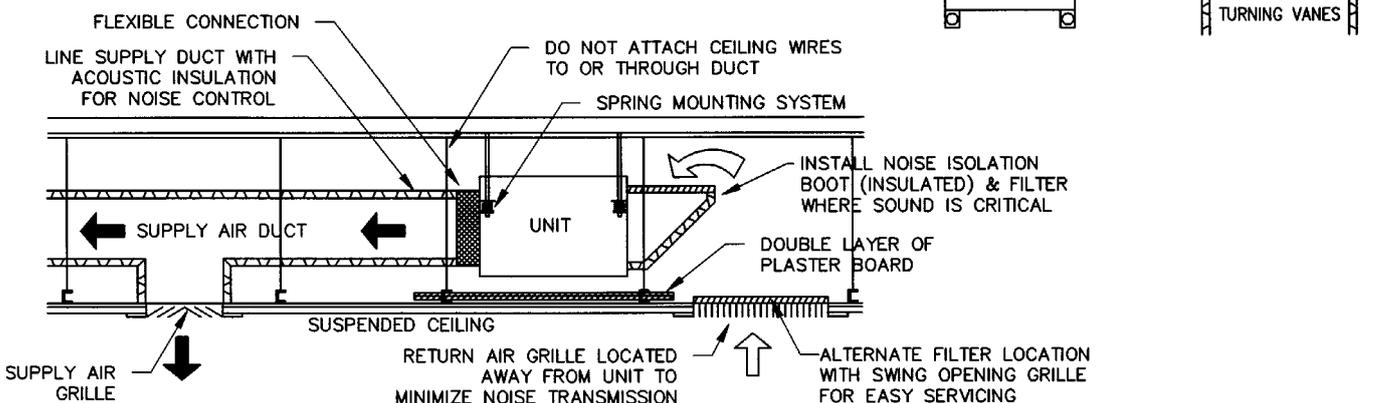
### NOTE

The manufacturer reserves the right to make changes in specifications at any time without notice or obligation. Certified data is available on request.

## Fig. 5 Application Considerations

### Recommendations for Noise Isolation:

1. Avoid installing units, with non-ducted return air, directly above spaces where noise is critical.
2. Use flexible connections between unit and rigid ducting.
3. Use generously sized acoustically lined ducts.
4. If generous duct size is not possible, use turning vanes on bends to reduce air turbulence (regenerated noise).
5. Use 90° bends in ducting to significantly assist in noise reduction.



**SPECIFICATION TABLE**

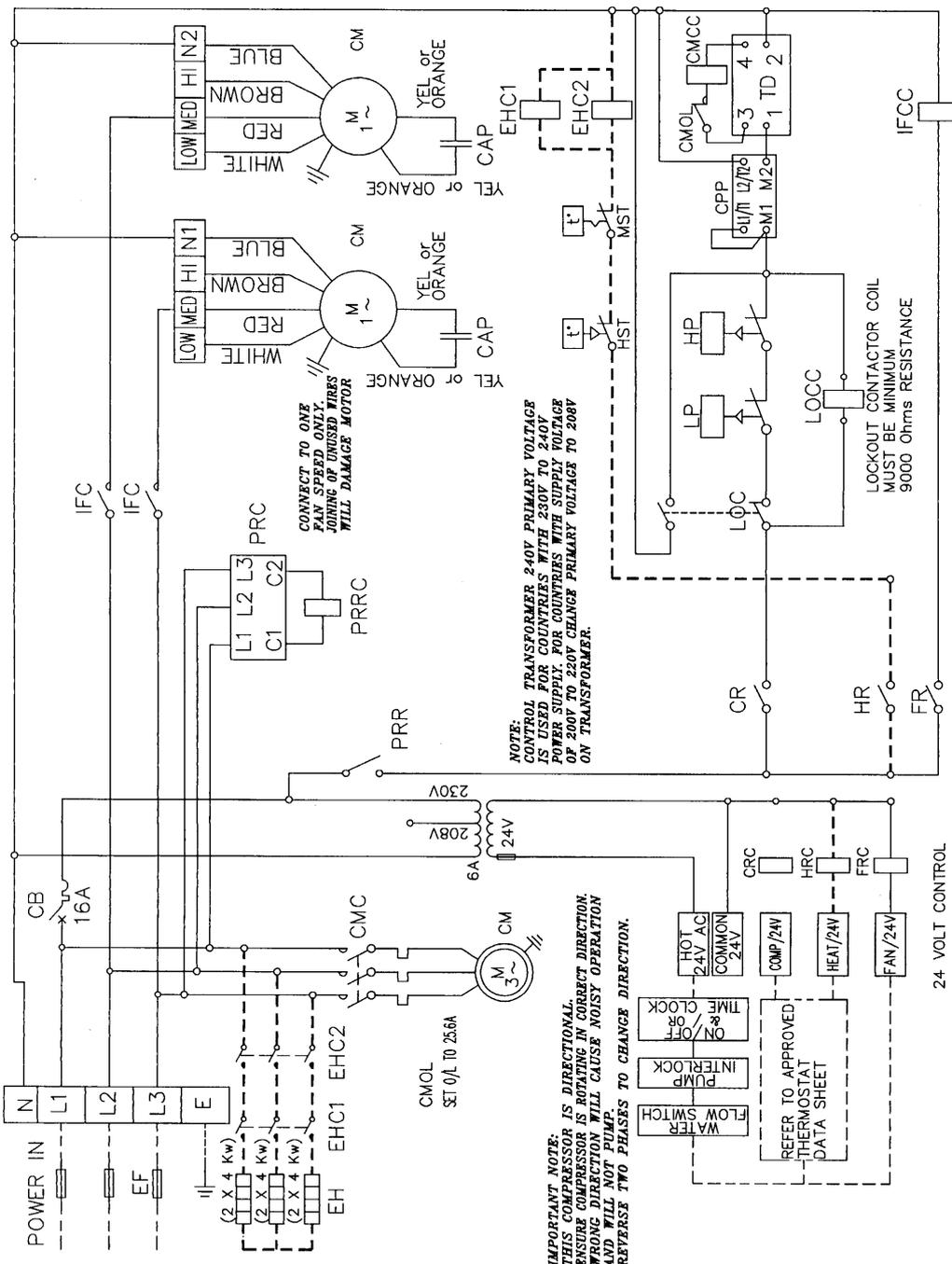
CAPACITIES - ASI861.1(A)	MODEL 440
COOLING - NOMINAL	kw 43.5
HEATING - ELECT.HEAT (OPTION)	kw 24
ELECTRICAL INPUT	
COOLING -	kw 11.6
COOLING -	
COOLING -	EER/COP 12.8/3.75
<b>ELECTRICAL</b>	
SUPPLY REQUIRED	380-415V ± 10% ~ 50Hz
COMPRESSOR (3Ph) RUN AMPS RATED CONDITIONS A/Ph	16
FAN MOTOR (1Ph)	FLA 6.3 X2
FAN MOTOR CAPACITOR	µF 225 X 2
RUNNING AMPS TOTAL	A/Ph 17/21/21
ELECT.HEAT (OPTION) (3Ph) 24 kW TOTAL	A/Ph 1.35
RECOMMENDED EXT.FUSE SIZE NO ELECT HEAT	A 1.63
RECOMMENDED EXT.FUSE SIZE PLUS ELECT HEAT	A 1.63
REFRIGERANT - HCFC22 (R22)	kg 6.75
WEIGHT - NETT	kg 3.42

CAP CAPACITOR	HR	HEAT RELAY 24V
CM COMPRESSOR MOTOR	HRC	HEAT RELAY COIL 24V
CMC COMPRESSOR CONTACTOR	HST	HIGH TEMP. SAFETY T/STAT.
CMCC COMPRESSOR CONTACTOR COIL	IFC	INDOOR FAN CONTACTOR
CMOL COMPRESSOR OVERLOAD	IFCC	INDOOR FAN CONTACTOR COIL
CPP COMPRESSOR PROTECTION PACK	LOC	LOCKOUT CONTACTOR
CR COMPRESSOR RELAY 24V	LOCC	LOCKOUT CONTACTOR COIL
CRC COMPRESSOR RELAY COIL 24V	LP	LOW PRESSURE CONTROL
EH ELECTRIC HEAT ELEMENT	MST	MANUAL HIGH TEMP. T/STAT
EHC ELECTRIC HEAT CONTACTOR	PRC	PHASE ROTATION CONTROL
FM FAN MOTOR	PRR	PHASE ROTATION RELAY
FR FAN RELAY 24V	PRRC	PHASE ROTATION RELAY COIL
FRC FAN RELAY COIL 24V	TD	TIME DELAY 5.0 MIN. DELAY ON BREAK
HP HIGH PRESSURE CONTROL		

**NOTE: CHECK WIRING BEFORE SWITCHING ON. INCORRECT CONNECTION WILL DAMAGE MOTORS**

CLIENT WIRING  
interconnections between units by client. Double insulated multi-core cable.

Title		HWP 440 C & CE	
WIRING SCHEMATIC			
Drawn D.W.H	Date 10-07-02	Drawing No.	308-704-002
Scale	ASvd	Revision	F



**IMPORTANT NOTE:**  
THIS COMPRESSOR IS DIRECTIONAL.  
ENSURE COMPRESSOR IS ROTATING IN CORRECT DIRECTION.  
WRONG DIRECTION WILL CAUSE NOISY OPERATION  
AND WILL NOT PUMP.  
REVERSE TWO PHASES TO CHANGE DIRECTION.

**IMPORTANT:**  
DO NOT BE CONNECTED TO  
PPY FOR COMPRESSOR TO OPERATE

ISSUE	MODIFICATION	ECN	DATE	APRVD	
F	REFRIGERANT 6.75 (POE) WAS 5.7 (MIN OIL) N1464		17-01-07	ROD	
E	Refrigerant Charge - Ester Oil		14-08-01	08-06 B.P.	
D	WAS 18X2 NOW 22.5X2MFD		12-28	10-07-06	ROD
C	SHOW 2 HEATERS PER PHASE		12-22	10-07-06	ROD
B	PHASE WIRE COLOURS REMOVED CAPACITOR WIRES OF MOTOR WERE YELLOW		05-02-03	D.A.B	
A	REVIEW: PHASE ROT.CONT. ADDED		N882	05-07-02	D.W.H

DRG SIZE	No.	DESCRIPTION	Mat.1	FINISH	ASSY No.

Programmed by	
OPTIONAL Electric Heat Wiring	
Plotted	17-01-07
©temperzone ltd	2003

**SPECIFICATION TABLE**

CAPACITIES - AST1861.1(A)	MODEL	440
COOLING - NOMINAL	kw	43.5
HEATING - REVERSE CYCLE	kw	46.5
ELECTRICAL INPUT	kw	24
COOLING -	kw	11.6
HEATING - REVERSE CYCLE	kw	11.3
COOLING -	EER/COP	12.8/3.75
<b>ELECTRICAL</b>		
SUPPLY REQUIRED	380-415V ± 10% ~ 50Hz	
COMPRESSOR (3Ph) RUN AMPS RATED CONDITIONS A/Ph	16	
FAN MOTOR (1Ph)	FLA 16.3 X2	
FAN MOTOR CAPACITOR	µF 225 X 2	
RUNNING AMPS TOTAL	A/Ph 17/21/21	
ELECTRICAL (OPTION) (3Ph) 24 kW TOTAL	A/Ph 35	
RECOMMENDED EXT.FUSE SIZE NO ELECT HEAT	A 63	
RECOMMENDED EXT.FUSE SIZE PLUS ELECT HEAT	A 63	
REFRIGERANT - HCFC22 (R22)	kg	6.75
WEIGHT - NETT	kg	349

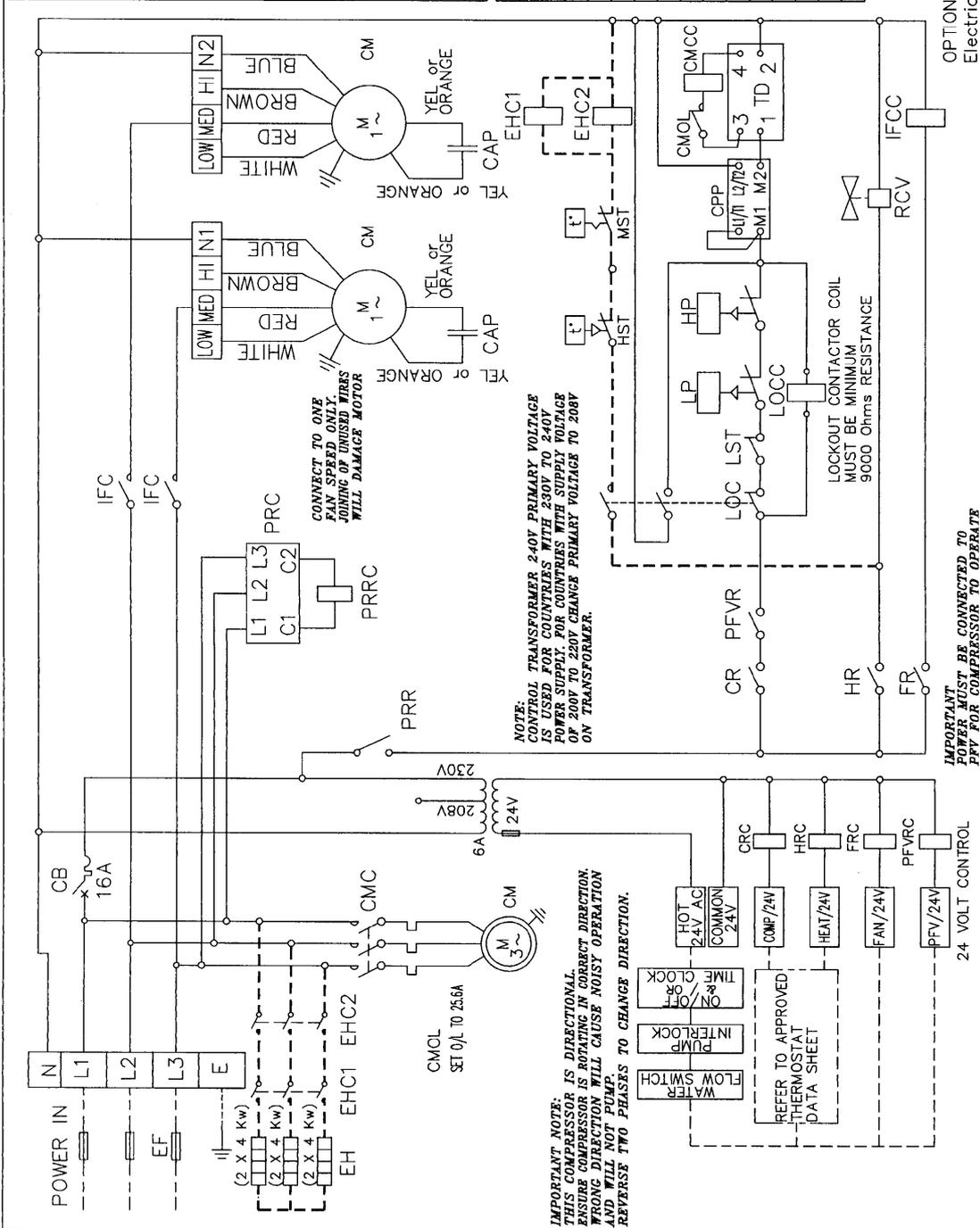
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CRC	COMPRESSOR RELAY COIL 24V	MST	MANUAL HIGH TEMP. T/STAT
EH	ELECTRIC HEAT ELEMENT	PEV	PUMP FLOW VERIFICATION
EHC	ELECTRIC HEAT CONTACTOR	PFVR	PUMP FLOW VERIFICATION RELAY COIL 24V
FM	FAN MOTOR	PFVRC	PUMP FLOW VERIFICATION RELAY COIL 24V
FR	FAN RELAY 24V	PRC	PHASE ROTATION CONTROL
FRC	FAN RELAY COIL 24V	PRR	PHASE ROTATION RELAY
HP	HIGH PRESSURE CONTROL	PRRC	PHASE ROTATION RELAY COIL
HR	HEAT RELAY 24V	RCV	REVERSE CYCLE VALVE
HRC	HEAT RELAY COIL 24V	TD	TIME DELAY 5.0 MIN. DELAY ON BREAK

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OPTIONAL -----  
 Electric Heat Wiring

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Drawn D.W.H	Date 10-07-02	Revision No.	307-704-002
Scale	1:1	Revision	F



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E	Refrigerant Charge - Ester Oil	140831-08-06	B.P.							
D	WAS 18X2 NOW 22.5X2MFD	1228	19-07-05	ROD						
C	SHOW 2 HEATERS PER PHASE	1222	18-07-05	ROD						
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