

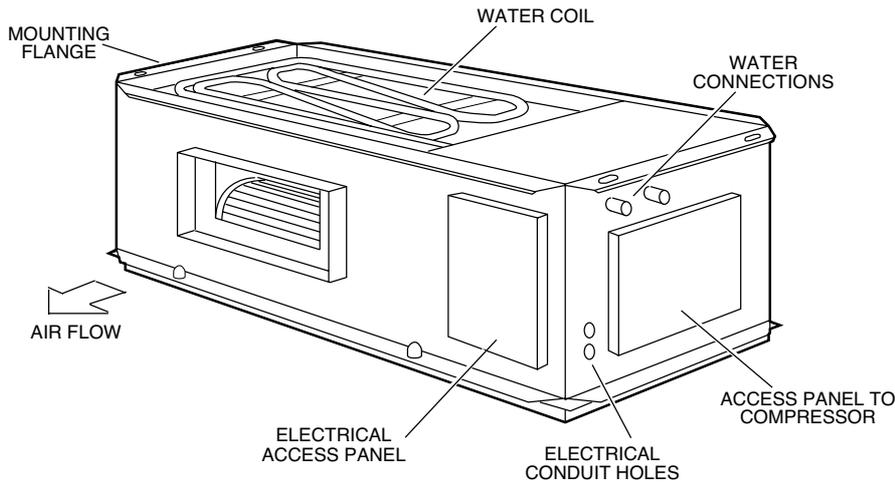
HWP 120, 140, 175, 210, 235

Ducted Water Cooled Packaged Air Conditioners

Installation & Maintenance

Fig. 1

Supply Air Side



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:

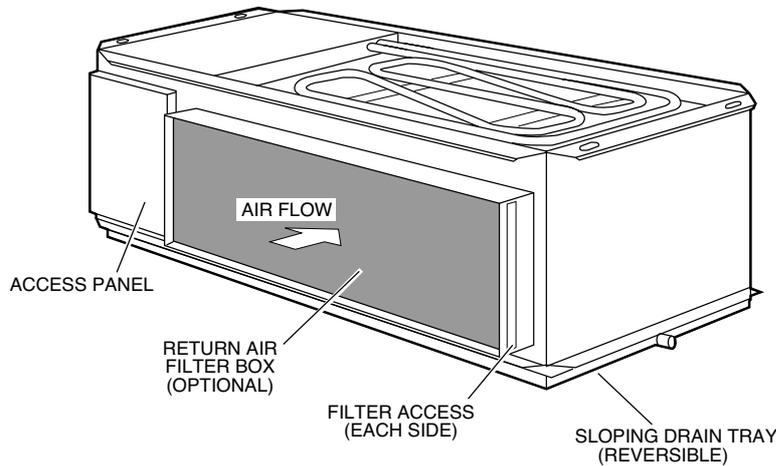
1. High pressure hose c/w fitting 600 mm long.
2. Optional Spring Mounting Kit.
3. Filter Box.
4. Condensate Lift-Pump Kit.
5. Supply & return air plenums.

FILTER BOX (Option)

The Filter Box is installed by unscrewing the return air spigot and replacing it with the Filter Box's filter-integrated spigot. The filter may be accessed from either side of this spigot. This new spigot has a depth of 135 mm, instead of 60 mm.

Fig. 2

Return Air Side



INSTALLATION

Preliminary Inspection

Cut the packing tape and lift off carton from the air conditioner. Check that the pipes of the refrigeration system are not rubbing at any area in the unit.

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 Allow adequate clearance for the filter (optional) to be withdrawn to its full length.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.3). 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 using locknuts (not supplied), as shown in Fig. 4.

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.

Fig. 3 Spring Mounting

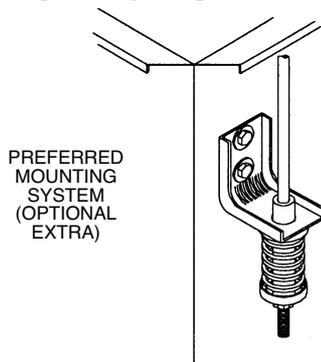
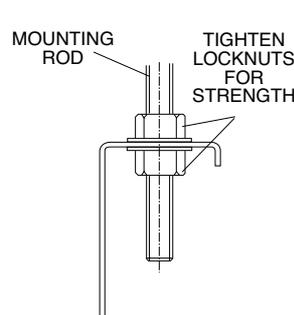


Fig. 4 Solid Mounting



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 7). 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 to give a firm installation (see Fig. 4).

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 7). 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. 7). The optional **temperzone** 600 mm flexible high pressure water hoses have female pipe threaded connections at each end. Maximum water pressure for each hose is 1720 kPa (250 psi). 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 in litres per second (l/s) are as follows:

HWP :	120	140	175	210	235
Nominal	0.58	0.70	0.85	1.00	1.18

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 120–235 Data Sheet 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 to protect against icing up of the water within the unit's condenser on heating mode and a pump/flow verification relay to protect 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 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

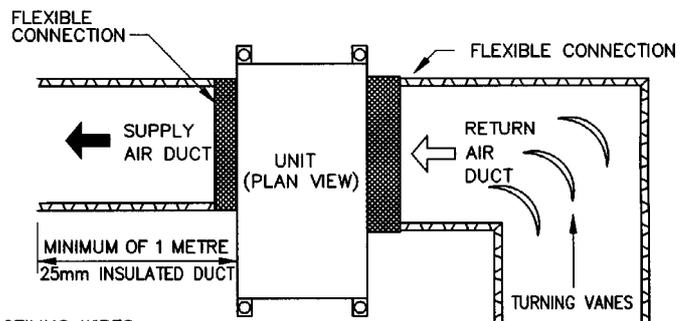
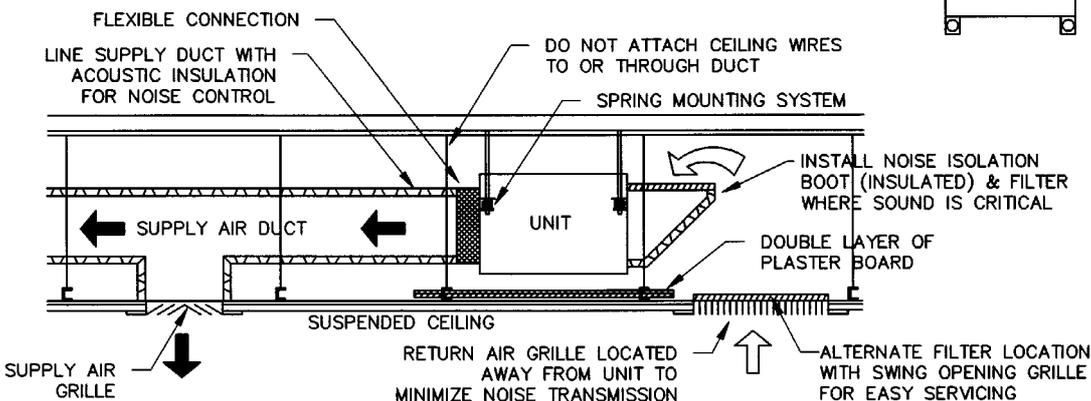
Replace air filter to maintain adequate air flow and efficiency.

This pamphlet replaces the previous issue no. 2622 dated 09/06. Wiring revision C.

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.



Dimensions (mm)

Not to Scale

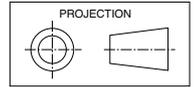


Fig. 6 HWP 120

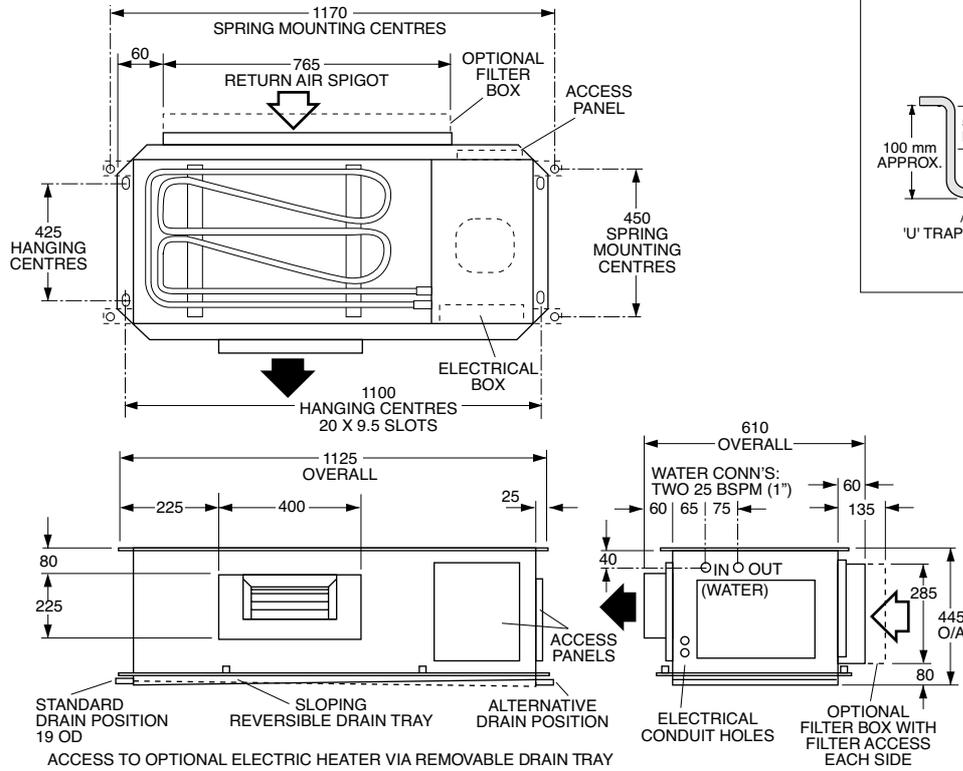
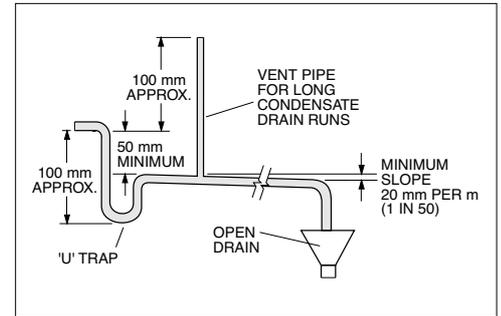


Fig. 7 Condensate Drain

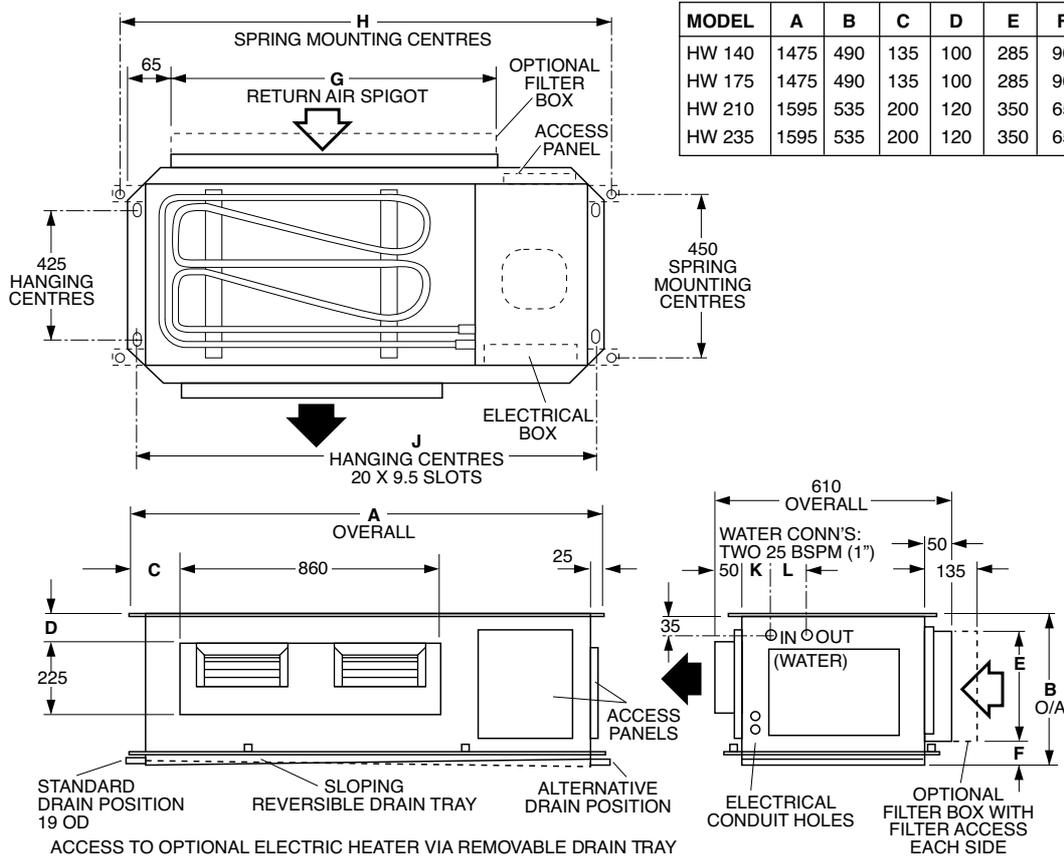


Net Weight 103 kg

NOTE

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

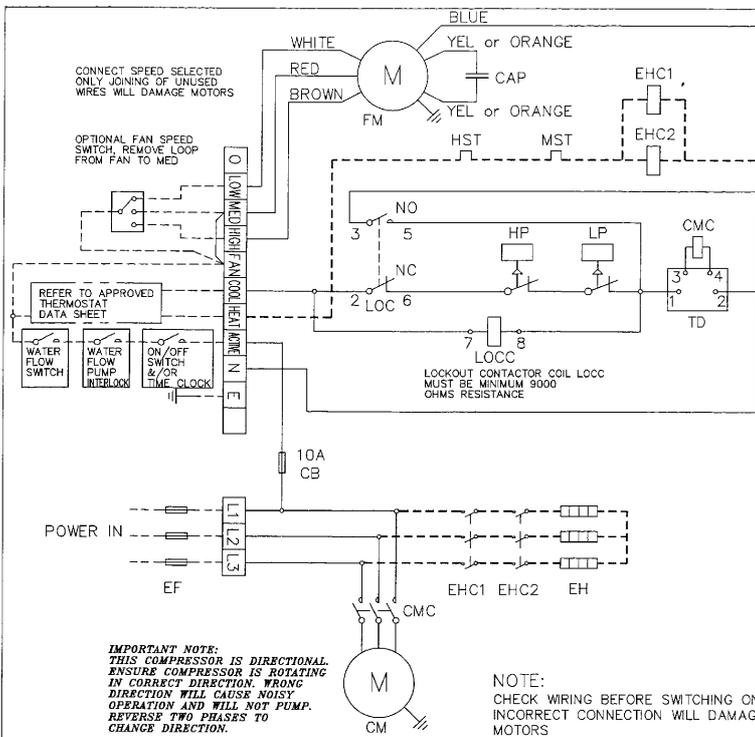
Fig. 8 HWP 140, 175, 210, 235



MODEL	A	B	C	D	E	F	G	H	J	K	L
HW 140	1475	490	135	100	285	90	1065	1515	1450	75	65
HW 175	1475	490	135	100	285	90	1065	1515	1450	75	65
HW 210	1595	535	200	120	350	65	1185	1640	1570	60	75
HW 235	1595	535	200	120	350	65	1185	1640	1570	60	75

Net Weight

HWP 140	123 kg
HWP 175	126 kg
HWP 210	148 kg
HWP 235	152 kg



SPECIFICATION TABLE		HWP				
CAPACITIES - AS1861.1(A)	MODEL	120	140	175	210	235
COOLING - NOMINAL	kW	12.0	14.1	17.5	20.6	23.1
HEATING - ELECT. HEAT (OPTION)	kW	9.0	9.0	9.0	12.0	12.0
ELECTRICAL INPUT						
COOLING -	kW	3.2	3.7	4.9	5.3	5.9
HEATING - ELECT. HEAT (OPTION)	kW	9.0	9.0	9.0	12.0	12.0
COOLING -	EER/COP	12.9/3.8	13.0/3.8	12.2/3.6	13.3/3.9	13.3/3.9
ELECTRICAL						
SUPPLY REQUIRED 3Ph 380-415V ± 10% ~ 50Hz						
COMPRESSOR MOTOR (3Ph)	RUN AMPS	5	5.5	7.5	7.8	10
FAN MOTOR (1Ph)	FLA	2.7	2.7	5.7	6.3	6.3
FAN MOTOR CAPACITOR	µFd	8	10	15	15	22.5
RUNNING AMPS/Ph	TRA/Ph	5/5/7.5	5.5/5.8	10.5/7.8	11.5/10/10	14/10/10
ELECT. HEAT (OPTION) (3Ph)	A/Ph	13	13	13	18	18
RECOMMENDED EXT. FUSE SIZE	A	20	25	25	35	35
REFRIGERANT - HCFC22 (R22)	kg	1.21	1.8	2.15	2.42	2.95
WEIGHT - NETT	kg	97	123	126	140	151

CAP	CAPACITOR	HST	AUTO HIGH TEMP. T/STAT
CB	CIRCUIT BREAKER	LOC	LOCKOUT CONTACTOR
CM	COMPRESSOR MOTOR	LOCC	LOCKOUT CONTACTOR COIL
CMC	COMPRESSOR CONTACTOR	LP	LOW PRESSURE SWITCH
EF	EXTERNAL FUSE	MST	MANUAL HIGH TEMP. T/STAT
EH	ELECTRIC HEAT ELEMENT	NC	NORMALLY CLOSED
EHC	ELECTRIC HEAT CONTACT	NO	NORMALLY OPEN
FLA	FULL LOAD AMPS	TD	TIME DELAY (SET TO 6 MINS)
FM	FAN MOTOR	TRA	TOTAL RUNNING AMPS.
HP	HIGH PRESSURE SWITCH		

CLIENT WIRING -----
 Interconnections between units by client. Double insulated multi-core cable.
 OPTIONAL -----
 Electric Heat Wiring

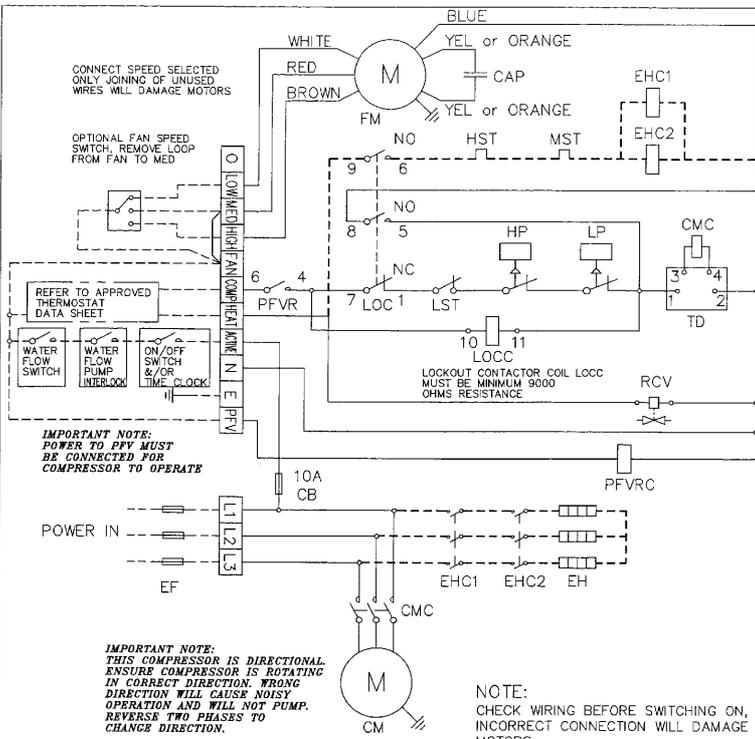
C	REFRIG HWP120 1.21 (POE) WAS 1.15 (MIN OIL)				
	REFRIG HWP140 1.8 (POE) WAS 1.6 (MIN OIL)				
	REFRIG HWP175 2.15 (POE) WAS 1.7 (MIN OIL)	N1464	17-01-07	ROD	
	REFRIG HWP210 2.42 (POE) WAS 1.95 (MIN OIL)				
	REFRIG HWP235 2.95 (POE) WAS 2.35 (MIN OIL)				
B	New Refrigerant charge-Ester Oil	1408	31-08-06	B.P	
A	CAPACITOR WIRE OF MOTOR WAS YELLOW	930	12-06-00	D.A.B	
ISSUE	MODIFICATION	ECN	DATE	APRVD	

DRG SIZE	No.	DESCRIPTION	Mat'l	FINISH	ASSY No.

Programmed by
 PLOTTED 17-01-07
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Title: HWP 120 TO 235 C & CE WIRING SCHEMATIC

Drawn P.W-M Date 20-06-01 Drawing No. 308-324-002 Revision C
 Scale $\frac{1}{2}$ vs $\frac{1}{3}$



SPECIFICATION TABLE		HWP				
CAPACITIES - AS1861.1(A)	MODEL	120	140	175	210	235
COOLING - NOMINAL	kW	12.0	14.1	17.5	20.6	23.1
HEATING - REVERSE CYCLE	kW	11.0	13.5	16.2	18.5	23.3
HEATING - ELECT. HEAT (OPTION)	kW	9.0	9.0	9.0	12.0	12.0
ELECTRICAL INPUT						
COOLING -	kW	3.2	3.7	4.9	5.3	5.9
HEATING - REVERSE CYCLE	kW	2.9	3.5	4.4	4.8	5.7
HEATING - ELECT. HEAT (OPTION)	kW	9.0	9.0	9.0	12.0	12.0
COOLING -	EER/COP	12.9/3.8	13.0/3.8	12.2/3.6	13.3/3.9	13.3/3.9
ELECTRICAL						
SUPPLY REQUIRED 3Ph 380-415V ± 10% ~ 50Hz						
COMPRESSOR MOTOR (3Ph)	RUN AMPS	5	5.5	7.5	7.8	10
FAN MOTOR (1Ph)	FLA	2.7	2.7	5.7	6.3	6.3
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RUNNING AMPS/Ph	TRA/Ph	5/5/7.5	5.5/5.8	10.5/7.8	11.5/10/10	14/10/10
ELECT. HEAT (OPTION) (3Ph)	A/Ph	13	13	13	18	18
RECOMMENDED EXT. FUSE SIZE	A	20	25	25	35	35
REFRIGERANT - HCFC22 (R22)	kg	1.21	1.8	2.15	2.42	2.95
WEIGHT - NETT	kg	99	128.5	131.5	148	152

CAP	CAPACITOR	LOC	LOCKOUT CONTACTOR
CB	CIRCUIT BREAKER	LOCC	LOCKOUT CONTACTOR COIL
CM	COMPRESSOR MOTOR	LP	LOW PRESSURE SWITCH
CMC	COMPRESSOR CONTACTOR	LST	LOW SAFETY T/STAT
EF	EXTERNAL FUSE	MST	MANUAL HIGH TEMP. T/STAT
EH	ELECTRIC HEAT ELEMENT	NC	NORMALLY CLOSED
EHC	ELECTRIC HEAT CONTACT	NO	NORMALLY OPEN
FLA	FULL LOAD AMPS	PFVR	PUMP-FLOW VERIFICATION RELAY
FM	FAN MOTOR	PFVRC	PUMP-FLOW VERIFICATION RELAY COIL
HP	HIGH PRESSURE SWITCH	RCV	REVERSE CYCLE VALVE
HST	AUTO HIGH TEMP. T/STAT	TD	TIME DELAY (SET TO 6 MINS)
		TRA	TOTAL RUNNING AMPS.

CLIENT WIRING -----
 Interconnections between units by client. Double insulated multi-core cable.
 OPTIONAL -----
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	REFRIG HWP210 2.42 (POE) WAS 1.95 (MIN OIL)				
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 Scale $\frac{1}{2}$ vs $\frac{1}{3}$