



## Water Cooled Units Technical Data

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HWP 370, 445

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Cooling Capacity  
36.6kW - 44.5kW

Heating Capacity  
34.9kW - 42.2kW

# Water Cooled Air Conditioners



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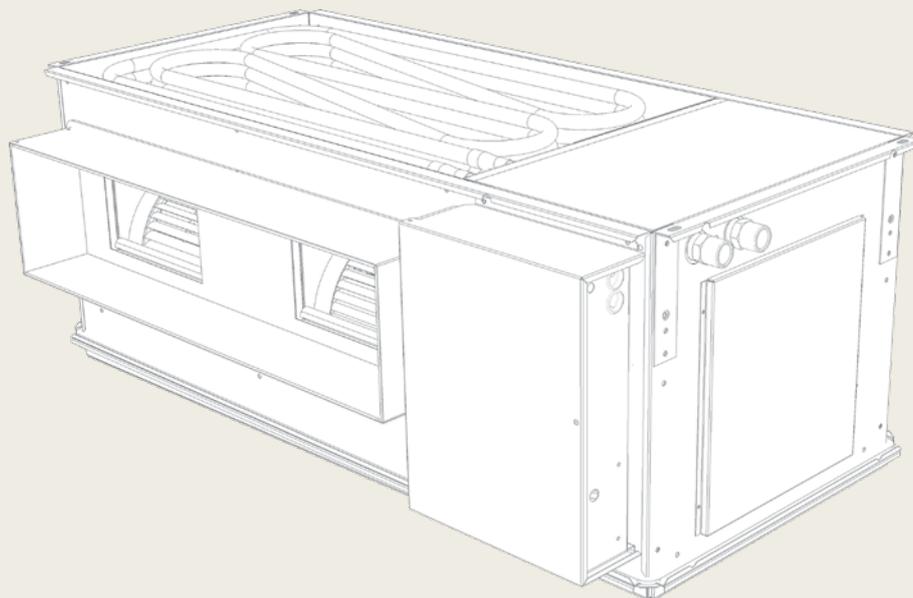
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# Water Cooled Air Conditioners

HWP 370 & 445



The HWP units provide a choice of cooling or reverse cycle (heat pump) packaged system air conditioners designed and developed to comply with and exceed AS / NZS 3823.



# Water Cooled Air Conditioners

## HWP 370 & 445



### Applications

The HWP-K units are ideal for multi-unit installations such as high-rise office, apartments or hotel buildings, where the flexibility of individual zone control is required.

### INTRODUCTION

The temperzone HWP-K series is a range of ducted water sourced packaged air conditioners designed to provide year round comfort to room occupiers.

Compact & reliable, these units can be installed above the ceilings, corridors or dedicated plant area, saving valuable floor space and providing conditioned air direct to the required locations.

HWP-K series are designed to be used with simple duct layouts. To take maximum advantage of this feature, units should be located as close to the space to be air conditioned as acoustic criteria allows. Multiple smaller units, utilizing minimal duct lengths can prove to be more economical than a large central ducted unit.

Designed also to suit different climates, the HWP-K series are available in 3 versions

1. Reverse cycle (R)  
ie Heat Pump / Cooling & Heating
2. Cooling Only (C)
3. Cooling with Electric Heat (CE)

The standard unit is right handed, i.e. when facing the discharge side of the unit, the water connections are on the right hand side of the unit. Opposite Hand versions are also available.

In office buildings, an HWP unit system can provide the ideal off-peak system for occupied areas when the main system is not running, e.g. night time, weekends, holidays.

HWP unit systems can be applied to provide owner occupiers with individual control and billing, thus avoiding large central plant room areas, e.g. in apartment buildings.

Installing multiple reverse cycle units enables simultaneous cooling and heating in different parts of the buildings.

HWP systems are typically part of an overall water cooled (Hydronic) system that incorporates a form of heat rejection, usually a cooling tower, heat exchanger or radiator (dry) cooler.

# Water Cooled Air Conditioners

## HWP 370 & 445



### FEATURES

#### Refrigerant

Each unit is factory charged with refrigerant R410A, which has a zero ozone depletion potential.

#### Efficient

These air conditioners provide one of the most efficient forms of cooling and / or heating you can invest in; each unit incorporates a high efficiency scroll compressor. Heat exchange coils use inner grooved (rifled) tube for a better heat transfer.

#### Performance

Fan speed is selected using High / Medium / Low terminals to match the supply air requirements.

#### Durable

Temperzone units have a tough galvanised steel construction. The evaporator coil is a die formed plate type epoxy coated aluminium fins epoxy coated, mechanically bonded to high efficiency rifled copper tube. Each HWP unit can (excluding flexible hoses) withstand a maximum water pressure of 2760kPa (400 psi). Condensate drain trays are insulated and powder coated for complete moisture protection. The drain tray is easily removed for inspection and cleaning.

#### Quiet

HWP-K series are well insulated to minimize and attenuate noise. Spring mounting kits are supplied with the units to minimise vibration transfer.

#### Unit Protection

Units are fitted with a high pressure lockout protection. These protect the unit in the event of a condenser water flow failure in cooling mode. Sensors protect against low evaporator coil temperature and loss of refrigerant. Units include an anti-rapid cycle timer for compressor on / off protection.

HWP reverse cycle units also have a low refrigerant temp safety to protect against icing up of the water within the tube in tube heat exchanger in heating mode, and a pump flow verification to protect individual units from a loss of water flow.

Convenient lockout contactor re setting is achieved by turning the power supply to the unit off, then on again, avoiding the need to access each unit if the cause of a fault is the failure of the condenser water supply.

Each compressor has internal overload protection.

#### Insulation

Closed cell foam insulation has been used in the indoors cabinet to ensure no particles are introduced into the airstream. Insulation is foil faced and meets fire test standards AS 1530.3 (1999) and BS 476 parts 6 & 7.

#### Peace of Mind

temperzone operates a quality management system that conforms to AS/NZS ISO 9001 :2008. temperzones products have been selected against worldwide competition, for use in some of the most exclusive projects – chosen because of their proven efficiency, durability, performance, reliability and value.

#### Electric Heating

(HWP-CE model)

Electric element/s have spiral wound stainless steel fins to give increased area and low surface temperature. They are totally enclosed within the unit and are supplied with an auto (90°C) and manual (120°) high temp. safety thermostats required to meet AS/ NZS 60335.2.2006.

# Water Cooled Air Conditioners

## HWP 370 & 445



### ACCESSORIES (SUPPLIED)

#### Spring Mounting Kit

The HWP series Spring Mounting Kit supplied with each unit has been designed to minimise the transfer of vibration from the unit to the building structure. It is recommended to use for all HWP installations

#### Air Filter

HWP 370/445 are supplied with return air spigot as standard; filters optional.

For ducted return air applications, filters should ideally be located in the ceiling return air grille/s and removed from the HWP unit's return air spigot, thereby reducing resistance and improving access for cleaning.

### OPTIONAL EQUIPMENT

1. temperzone SAT-2 Controller
  - connection cables supplied separately.
2. Filters - EU2/G2 washable synthetic fibre.
3. Condensate -Lift Pump – max. lift 800mm.
4. Flexible hoses.

### APPLICATION CONSIDERATIONS

#### Acoustics

Shorter duct applications will require greater attention to acoustic criteria (refer page 11).

#### Mounting

It is recommended that HWP units be mounted using the spring mounting system supplied. This system minimises transfer of vibration into the building structure.

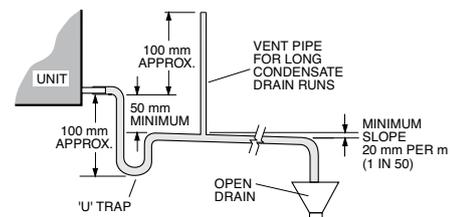
#### Positioning

When determining the installation location consideration should be given to each unit to facilitate future servicing and maintenance, e.g. room for removal of filter and access to electrics.

#### Condensate Drain

The condensate drain should have a slope of at least 1 in 50 and must not be piped to a level above the unit drain tray.

An optional condensate lift-pump is available to remove condensate from the unit in tight installations where a well sloped drain line is not practical.



# Water Cooled Air Conditioners

## HWP 370 & 445



### WATER CONNECTION

#### General

The HWP unit's IN and OUT water connections are male pipe threaded. The unit can be piped directly or by using two temperzone flexible high pressure water hoses (option) which have female pipe threaded connections at each end.

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 recommended that the water supply system be fitted with a water flow switch and water flow verification circuit. These items prevent the HWP units from going into fail safe lockout status due to a loss of water flow. Failure to install the above items could require the resetting of all HWP units in the system – by breaking the power supply to each unit or by Modbus command.

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 maintain water flow at a constant rate. The water flow rates in litres per second (l/s), at nominal water temperature, are stated in the Specifications Table (page 20). The water circuit needs to be balanced to suit the design  $\Delta T$  of the central water system.

The HWP unit controller will protect the refrigeration system of the unit under extreme conditions. On heating cycle it protects to ensure the evaporating temperature does not drop below freezing point for an extended period. The extreme lowest leaving water temperature needs to be such that the unit does not cut-out on protection and will be above approx. 4°C. This can be achieved by a combination of the entering Water Temperature (EWT) and the reduced flow rate.

#### Water Circulating Pump Option

HWP 370/445 complete with SAT-2 Controller can activate a water circulating pump only when required.

#### Water Control Option

A water shut-off relay on the HWP can be used to activate a water shut-off valve (supplied and fitted by others). This will ensure the water is not flowing through the unit when it is not operational for a long period of time, thereby reducing the overall central pump power usage.

### SAFETY FEATURES

1. HP and loss of refrigerant protection.
2. Anti-rapid cycle timer and internal overload for compressor protection.
3. Circuit breaker control circuits.
4. Electronic pressure control prevents icing up of the tube-in-tube heat exchanger during heating cycle.
5. Frost protection on cooling cycle.
6. Sensor fault indication.
7. Compressor minimum run time to ensure oil return.

### ELECTRICAL

The electrical supply required (including voltage fluctuation limits) is: 3 phase 400V a.c. 50 Hz with neutral and earth.

All units are compliant to the latest MEPS standards.

# Water Cooled Air Conditioners

## HWP 370 & 445



### SAT-2 ROOM CONTROLLER (OPTIONAL)



#### Features:

- Cool / Dry / Fan modes.
- Heat / Auto modes
- Auto / High / Medium / Low fan speed selection.
- Temperature setting range from 16°C – 30°C.
- LED to indicate status of the unit [Power On/Off].
- Room temperature display.
- Real time clock.7 day timer – two start and/or stops per day
- On demand countdown run timer, up to 9 hours.
- • Auto-Restart or No Restart after power failure.
- Continuous or Intermittent selection of fan run-on in dead zone.
- Backlit screen for ease of reading; changes colour for each mode.
- Soft touch tab keys
- Battery backup (Lithium).
- Sleep function.
- Audible beep to acknowledge key entry or wireless remote control.
- Low voltage control cable.
- Colour: white and light grey (keypad - gold and blue).
- Optional:
  - Infra Red Remote controller
  - Remote return air sensor,
  - Extended interface lead,
  - Extra Wall Control plaque.

### NOMENCLATURE

Example

**H W P**    **3 7 0**    **C E K T**

Series

Size

Type

**H** - Hideaway  
**W** - Water Sourced  
**P** - Packaged

Divide by 10  
to get approx.  
nominal  
Capacity in  
kilowatts

**CE** - Cooling only with electric heat  
**R** - Reverse cycle  
**K** - Refrigerant R410A  
**T** - Three phase power supply

### TECHNICAL SUPPORT

For more information on the manufacturer or product support information, visit the website [www.temperzone.biz](http://www.temperzone.biz)

# Water Cooled Air Conditioners

## Performance Data



### COOLING CAPACITY (KW)

- T = Total Capacity (kW).
- S = Sensible Capacity (kW)
- FL = Water Flow (l/s)
- HR = Heat Rejection (kW)
- E.A.T. = Entering Air Temperature
- = Nominal Capacity (kW)

**Note:** Capacities are **gross** and do not include allowance for fan motor heat loss. For fan motor heat loss refer to Air Handling Performance. Water flow and cooling capacity based on 5 °C water temperature difference.

Model	Air Flow Rate (l/s)	Coil E.A.T		LEAVING WATER TEMPERATURE (L.W.T.) °C																							
		W.B °C	D.B °C	25				30				35				40				45				50			
				T	S	FL	HR	T	S	FL	HR	T	S	FL	HR	T	S	FL	HR	T	S	FL	HR	T	S	FL	HR
HWP370	1900	17	23	37.8	29.2	2.0	42.9	36.1	27.2	2.0	41.7	34.5	25.9	2.0	40.8	32.9	25.2	2.0	39.7	32.3	24.1	2.0	39.5	32.0	22.0	2.0	39.3
		19	27	40.5	29.3	2.0	45.5	40.0	28.8	2.0	45.7	36.6	28.6	2.0	42.8	35.7	27.2	2.0	42.7	32.9	26.8	2.0	39.8	32.3	26.3	2.0	39.8
		21	31	43.2	34.0	2.0	47.3	42.8	33.8	2.0	48.2	42.5	33.6	2.0	49.0	38.7	33.2	2.0	45.7	37.1	32.7	2.0	44.3	35.0	32.5	2.0	42.5
HWP445	2300	17	23	46.0	35.5	2.25	53.3	43.9	33.0	2.25	51.8	41.9	31.5	2.25	50.8	40.0	30.6	2.25	49.3	39.3	29.3	2.25	49.1	38.9	26.7	2.25	48.9
		19	27	49.3	35.7	2.25	56.6	48.6	35.0	2.25	56.8	44.5	34.8	2.25	53.3	43.4	33.0	2.25	53.1	40.0	32.6	2.25	49.5	39.3	32.0	2.25	49.5
		21	31	52.5	41.3	2.25	58.9	52.1	41.1	2.25	59.9	51.6	40.9	2.25	60.9	47.1	40.4	2.25	56.8	45.1	39.8	2.25	55.1	42.6	39.6	2.25	52.9

### HEATING CAPACITY (KW) HW\* R REVERSE CYCLE VERSION

- HC = Heating Capacity (kW)
- HAb = Heat Absorbed (kW)
- EWT = Entering Water Temperature (°C) (Minimum required 17°C)

- INPT = Compressor Input (kW)
- E.A.T. = Entering Air Temperature (°C)
- = Nominal Capacity (kW)

Model	Water Flow Rate l/s	Coil E.A.T. D.B. °C	LEAVING WATER TEMPERATURE (L.W.T.) °C											
			12.5				15.5				18.5			
			HC	HAb	EWT	INPT	HC	HAb	EWT	INPT	HC	HAb	EWT	INPT
HWP370R	2.0	18	32.8	24.5	16.2	6.5	35.1	26.4	19.5	6.8	37.6	28.7	22.8	7.1
		21	32.5	23.8	16.2	6.9	34.9	25.8	19.4	7.2	37.5	28.1	22.7	7.6
		25	32.4	23.1	16.2	7.5	34.9	25.2	19.4	7.8	37.3	27.3	22.7	8.1
HWP445R	2.25	18	39.8	29.0	16.5	8.3	42.5	31.4	19.8	8.7	45.5	34.1	23.1	9.0
		21	39.4	28.2	16.4	8.8	42.2	30.6	19.7	9.2	45.4	33.3	23.0	9.7
		25	39.3	27.3	16.4	9.6	42.2	29.8	19.7	10.0	45.2	32.4	23.0	10.4

# Water Cooled Air Conditioners

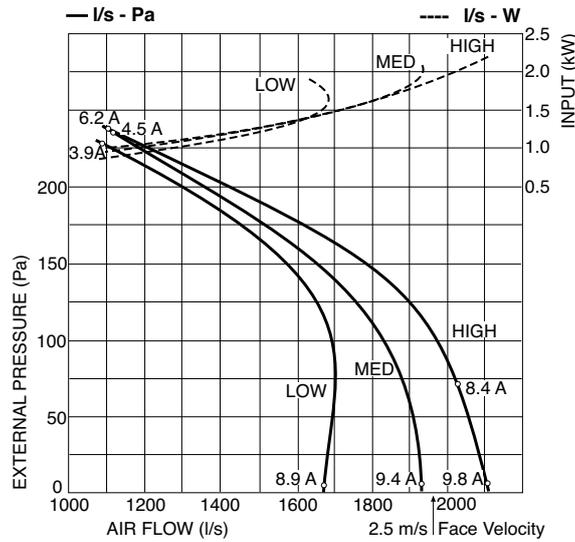
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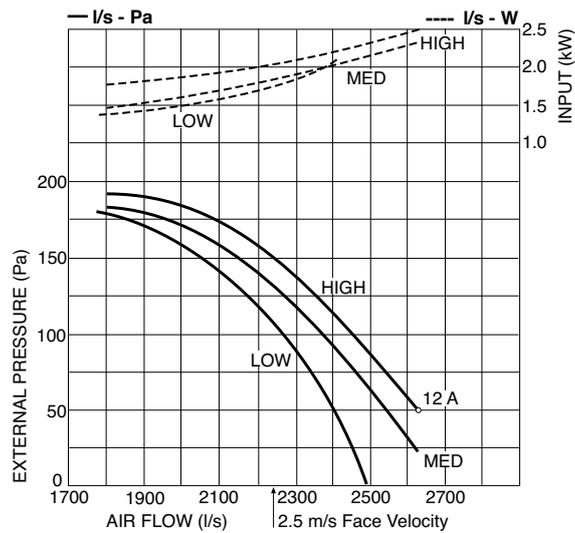
### AIR HANDLING

Airflows are for a dry coil. Reduce airflow by 10% in high moisture removal conditions. In a free blow application, beware of exceeding fan motor's full load amp limit. **Air flows given are for HWP units without filter installed.**

#### HWP 370



#### HWP 445



Filter - EU2/G2 rated (clean)

Coil Face Velocity (m/s)	1.5	2.0	2.5
Pressure Loss (Pa)	15	25	40

# Water Cooled Air Conditioners

## Performance Data



### SOUND LEVELS

Note: SPL measured to JIS 8616:2015 (1m from source in an anechoic chamber)

#### SUPPLY AIR + INSULATED DUCT

Model	FAN SPEED	Air Flow (l/s)	SOUND PRESSURE LEVELS (SPL) dB(A)	SOUND POWER LEVELS (SWL) dB						
				SWL dB(A)	OCTAVE BAND FREQ. Hz					
					125	250	500	1k	2k	4k
HWP 370	LOW	1650	61	72	72	67	70	66	65	63
	MED	1800	62	73	74	68	70	68	66	64
	HIGH	1900	63	74	76	69	70	68	67	65
HWP 445	LOW	2150	62	73	71	68	70	68	66	64
	MED	2250	63	74	71	69	71	68	67	65
	HIGH	2300	63	74	72	70	71	69	67	65

#### SUPPLY AIR OUTLET

Model	FAN SPEED	Air Flow (l/s)	SOUND PRESSURE LEVELS (SPL) dB(A)	SOUND POWER LEVELS (SWL) dB						
				SWL dB(A)	OCTAVE BAND FREQ. Hz					
					125	250	500	1k	2k	4k
HWP 370	LOW	1650	66	77	77	72	75	71	70	68
	MED	1800	67	78	79	73	75	73	71	69
	HIGH	1900	68	79	81	74	75	73	72	70
HWP 445	LOW	2150	67	78	76	73	75	73	71	69
	MED	2250	68	79	76	74	76	73	72	70
	HIGH	2300	68	79	77	75	76	74	72	70

#### CASE BREAKOUT + RETURN AIR

Model	FAN SPEED	Air Flow (l/s)	SOUND PRESSURE LEVELS (SPL) dB(A)	SOUND POWER LEVELS (SWL) dB						
				SWL dB(A)	OCTAVE BAND FREQ. Hz					
					125	250	500	1k	2k	4k
HWP 370	LOW	1650	63	74	79	70	70	69	66	62
	MED	1800	64	75	79	72	71	71	68	64
	HIGH	1900	65	76	82	72	72	72	68	65
HWP 445	LOW	2150	64	75	76	72	71	71	70	63
	MED	2250	65	76	77	73	72	71	70	64
	HIGH	2300	66	77	77	74	73	72	71	64

# Water Cooled Air Conditioners

## Performance Data



### SOUND PRESSURE LEVELS (SPL) WITHIN A ROOM

Deduct the room absorption effect below from Sound Power Levels (SWL) to obtain Sound Pressure Levels within a room.

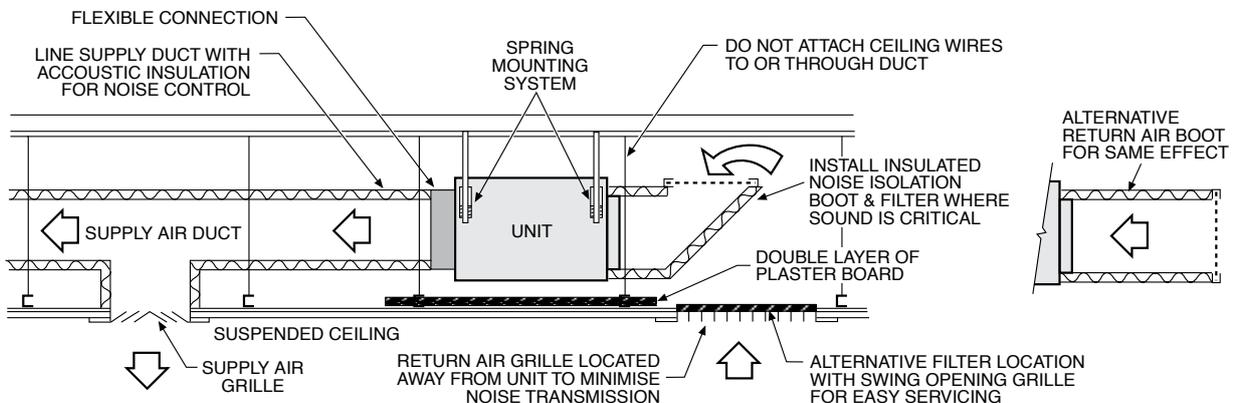
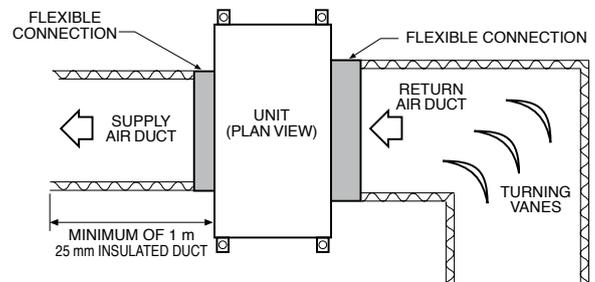
**Note:** Occupant at least 1.5 m from sound source.

Room type	OCTAVE BAND FREQUENCY Hz					
	125	250	500	1K	2K	4K
Soft	4	8	11	11	11	11
Medium	3	7	8	9	9	9
Hard	0	1	3	4	4	5

### RECOMMENDATIONS FOR NOISE ISOLATION

#### Particularly for high static installations:

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.

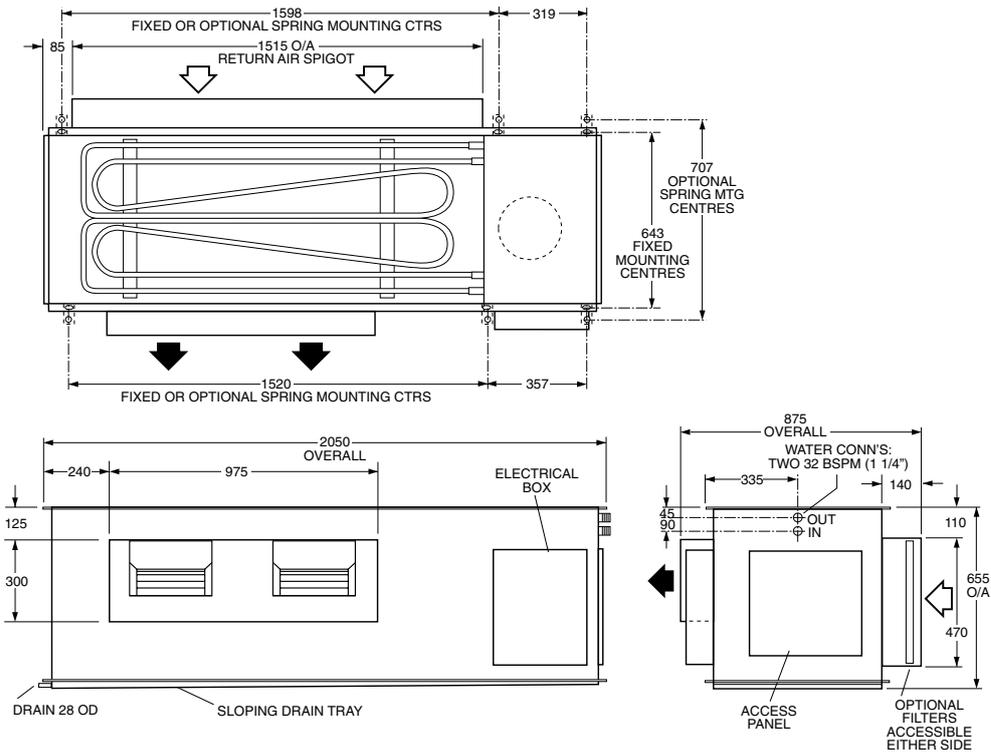


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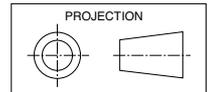
## Dimensions (mm)



### HWP 370

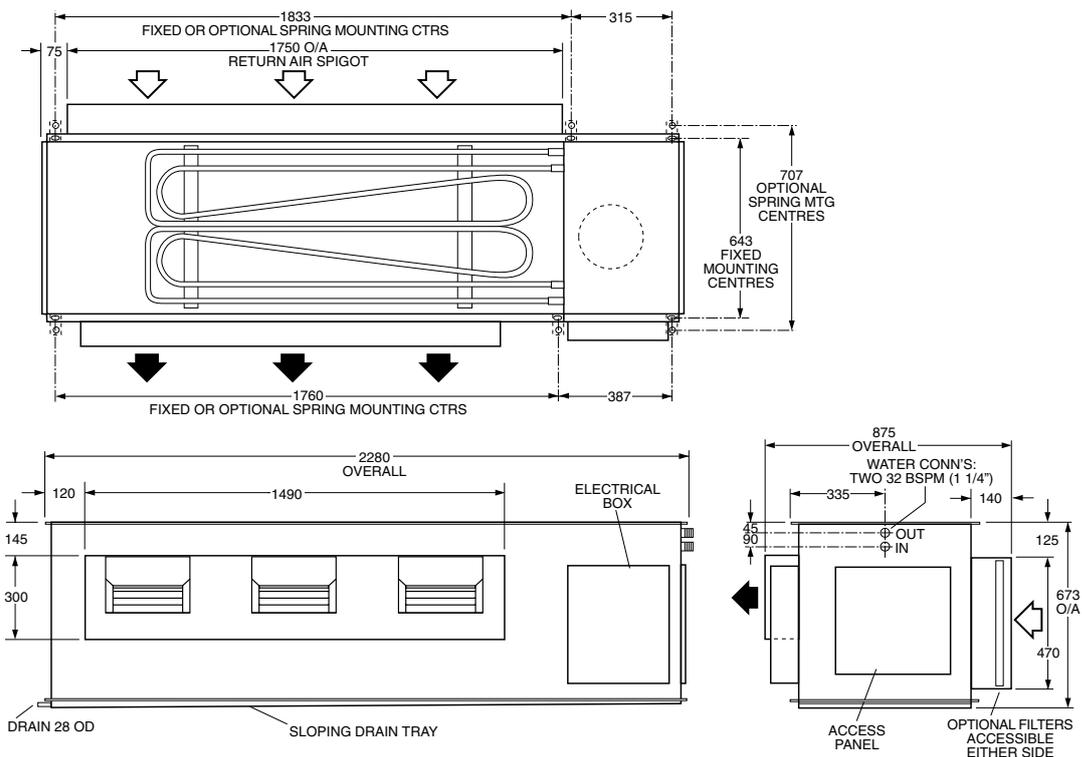


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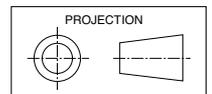


Net Weight 290 kg

### HWP 445



Not to Scale



Net Weight 385 kg

# Water Cooled Air Conditioners

## Specifications



MODEL	HWP 370	HWP 445
Nominal Cooling Capacity (kW)	36.6	44.5
Net Cooling Capacity* (kW)	34.65	42.2
EER / AEER	3.71 / 3.70	3.41 / 3.41
Heating Capacity** (kW)	34.9	42.2
COP / ACOP	3.86 / 3.85	3.64 / 3.64
Optional Electric Heat (kW)	18	24
Air Flow*** (l/s)	1900	2300
Power Supply	3 Phase 400V 50Hz	
Run Current (Amps/Phase)	18.38 / 18.38 / 14.2	22.98 / 22.98 / 22.98
Max Run Current (Amps/Phase)	21 / 21 / 15.5	26 / 26 / 26
Refrigerant	R410A	
Nominal Water Flow (l/s)	2	2.25
Nominal Pressure Drop (kPa)	48.3	34.5
Unit Controller	Protection Board	
Weight (Net) (kg)	290	385

### Note:

\* Nominal Cooling Capacity at AS/NZS 3823.1 conditions.  
 Entering Air Temperature 27°C db / 19°C wb  
 Entering Water Temperature 30°C

\*\* Heating Capacity (HWP-R) at AS/NZS 3823.1 conditions  
 Entering Air Temperature 21°C db  
 Entering Water Temperature 21°C

\*\*\* Airflow at nominal conditions above

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