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01

AR-DA-Series

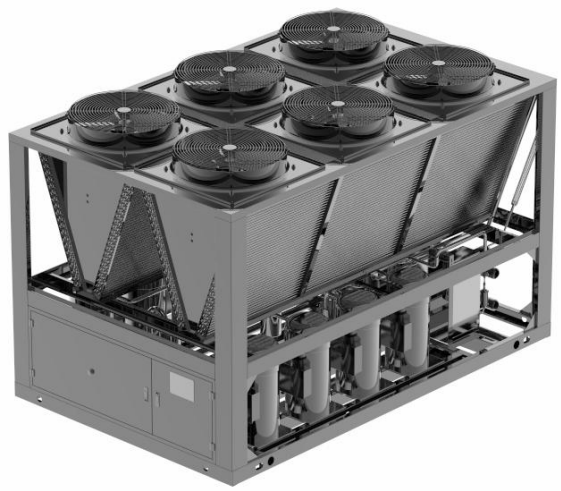
AIR SOURCE HEAT PUMP

MAX. Hot Water Temp. 80℃

MIN. Ambient Temp.-30℃

Heating capacity : 18 KW-390 KW





TYPICAL APPLICATION AREAS

- House
- Apartment / Hotel
- Shopping mall/Suprmarket
- Office building
- Hospital / School
- Manufacturing plant
- Chemical plant / Food factory
- Pharmaceutical plant
- Green house
- Livestock farming plants Dwelling

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APPLICATION FIELD OF HEAT PUMP

Civil buildings, Public buildings	Purpose
Residence	Heating, Domestic hot water
School	Heating, Domestic hot water
Hospitals, clinics	Heating, Domestic hot water
Museums, libraries, gymnasiums	Heating, Domestic hot water
Airport ，Station	Heating, Domestic hot water
Commercial field	**Purpose**
Office building	Heating,Domestic hot water
Hotels, Apartments, Resorts	Heating, Domestic hot water
Shopping malls, Supermarkets	Heating, Domestic hot water
Restaurants, Bars	Heating, Domestic hot water
SPA、Sauna	Heating, Domestic hot water
Agriculture and Subsidiary Areas	**Purpose**
Greenhouse	Heat preservation, Heating
Seed breeding houses	Heat preservation, Heating/Drying
Deeply processed agricultural products	Heating,Dehydration, Drying
Farming plants	Heat preservation, Heating
Slaughtering and Meat Processing	Process hot water
Chemical industry	**Purpose**
Petrol chemical plant	Preheating,Heating, Purification, Separation and Distillation
Chemical Fiber Plant	Heat preservation,Heating,Evaporation,Distillation
Oleochemical industry	Heat preservation,Heating,Distillation
Fertilizer and feed plants	Preheating, Heating and Drying Process
Manufacturing field	**Purpose**
Paper mills, Textile mills, Printing plants	Preheating,Heating,Drying and Cooking
Food factory, Dairy factory, Brewery	Preheating,Heating,Fermentation and Disinfection
Crafts and Ceramics	Drying process
Wood processing,Furniture, Floor board	Drying process
Painting Factory	Surface treatment drying, curing
Electroplating factory	Electroplating process

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Air source heat pump technology is to use less electricity to capture heat from air and centralized supply to customers.

- **AR-DA** series heat pump an produce up to 80℃hot water， and almost 40%-50% less operation cost than traditional heating equipment.
- **AR-DA** series heat pump can be used in the lowest-30℃ environment,also can be used in colder areas.
- **AR-DA** series heat pump do not generate pollution sources,application of new environmentally friendly refrigerants (low GWP) without environmental impact.

AR-DA series air source heat pump,various specifications available , and can achieve a variety of functions, so it can be applied in more areas.



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Application

In the civil architecture field,air source heat pump is a good choice.

- The heat pump provides stable heat for the room.
- The heat pump is installed outdoor and does not occupy space in the house.
- Smaller size, easy to install, can be used quickly.
- Throughout the use season,compared with the traditional heating , heat pump will save more than 50% of the cost for users.
- Safty use conditions, no fire, explosion and other safety hazards.

AR-DA Series heat pumps have been used in many civil buildings (including cold areas)， and is constantly being selected by more users.

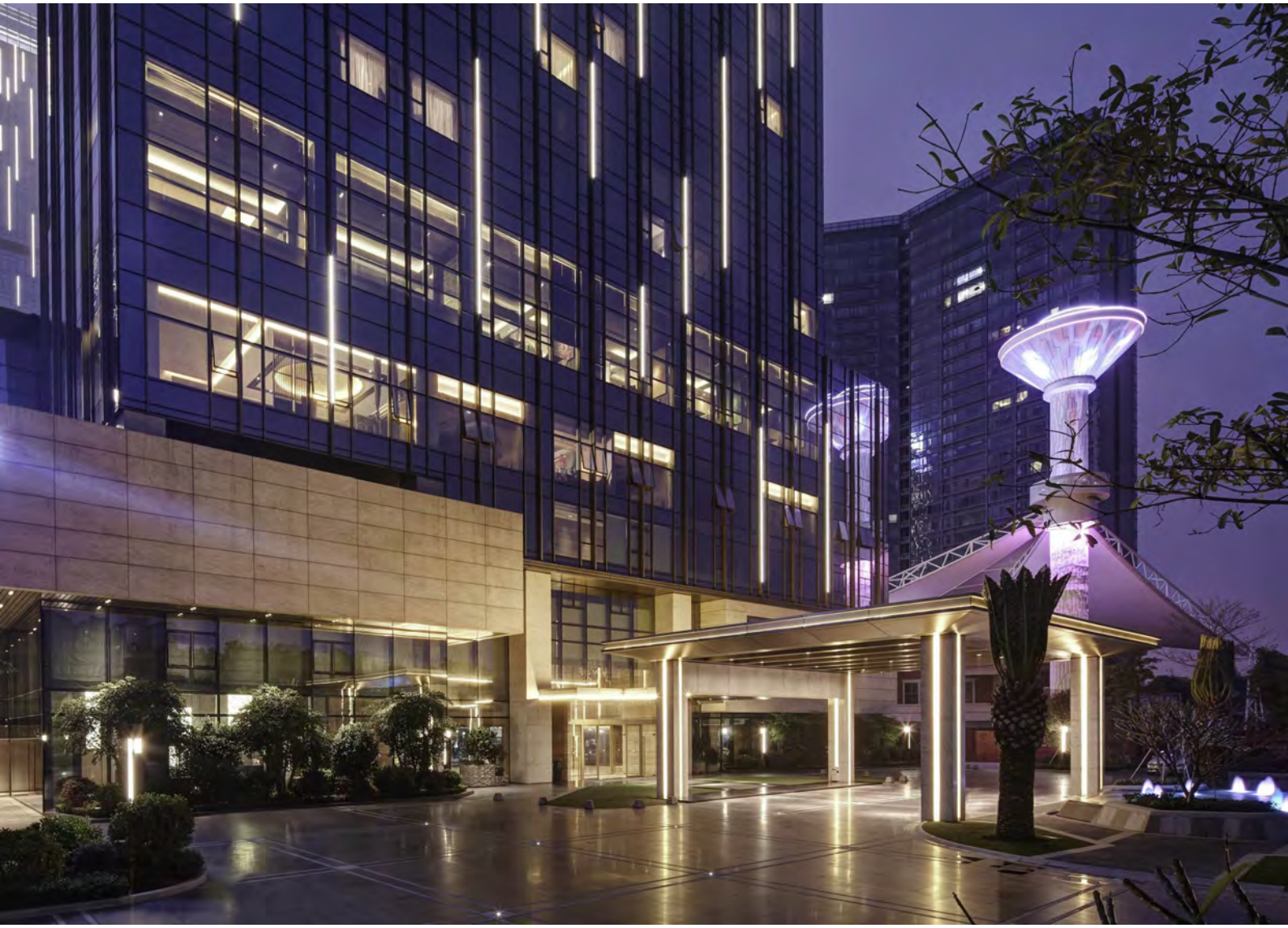


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Application

Using air source heat pump in office buildings, hotels, hospitals, shopping malls and other places is a very mature heating system solution.

- **Compared** with the traditional solution of using chillers for cooling in summer / boiler heating in winter,heat pump integrated cooling+heating function, from the air can get more energy only need less electricity, and the operating cost is only 1/3 of the traditional solution.
- **The** heat pump is installed on outdoor floor or roof top, does not need to set up the independent machine room.
- **Each** heat pump can be used independently, or centralized use，can accurately meet partial load requirements,avoid wasting heat.
- **Heat** pump system without pollutants, will not have adverse effects on the surrounding environment.



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Application

A large amount of hot water is usually used in industrial production,the traditional scheme is to use boilers or electric heaters,but need to pay high operating costs, increased production costs.

Heat pumps provide up to 80℃ hot water for the plant,It can meet the hot water demand of most production stages and is more energy-efficient than the traditional scheme.

Nowadays, more and more factories choose to use heat pump instead of boiler and electric heater,And in the continuous use of the process of production costs gradually reduced.



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BASIC INFORMATION

Model Number Nomenclature

AR-DA	18	H	M	A	S	-I	00
01	02	03	04	05	06	07	08

01 Series code

02 Heating capacity code(kW)

03 Working condition code

H：High hot water temp.type **L**：Low ambient temp. type

04 Refrigerant code

M：R134a **U**：R1234ze (High water temp.Type)

Q：R410a **N**：R407C (Low ambient temp.Type)

05 Power Supply code

A：380-420V/3N-50Hz **B**：220-240V/1N-50Hz **C**：220-240V/3N-50Hz **D**：380-420V/3N-60Hz

E：220-230V/3N-60Hz **F**：460V/3N-60Hz **G**：220-230V/1N-60Hz

06 Auxiliary function code

S：Standard **P**：Built-in water pump

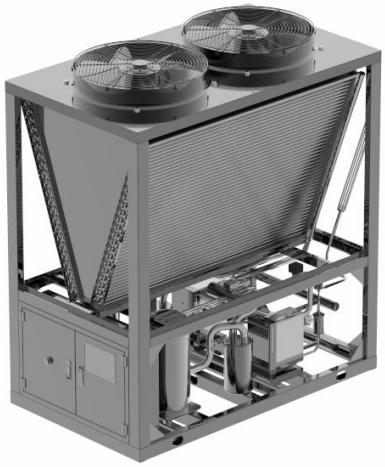
07 Compressor type code

I：Invariable frequency compressor

V：VFD compressor

08 Other custom function code

00-09(Manufacturer's internal code)



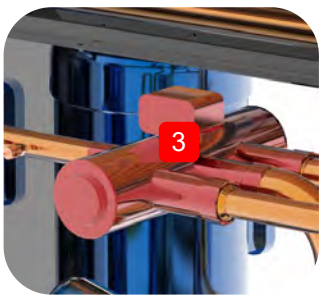


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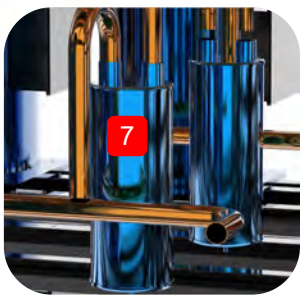
PRODUCT STRUCTURE

High Hot Water Temp. Type











1	Compressor	2	Water heat exchanger	3	Four way valve
4	Dry filter	5	Expansion valve	6	Air source heat exchanger
7	Gas liquid separator	8	Axial fans	9	Inverter（Optional）
10	Electrical box	11	Flow switch		

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PRODUCT STRUCTURE

Low Ambient Temp. Type

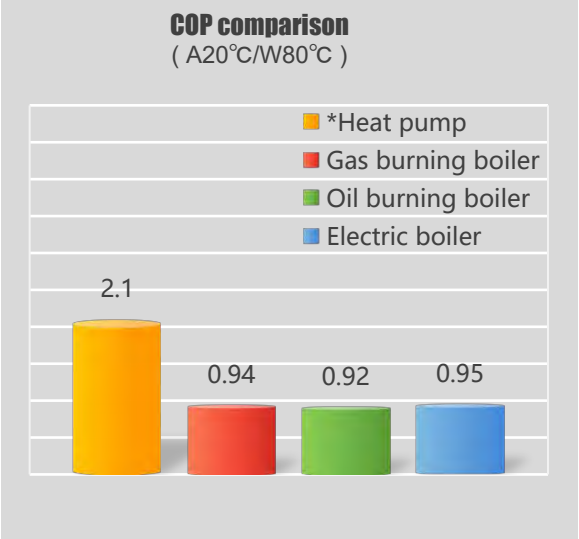


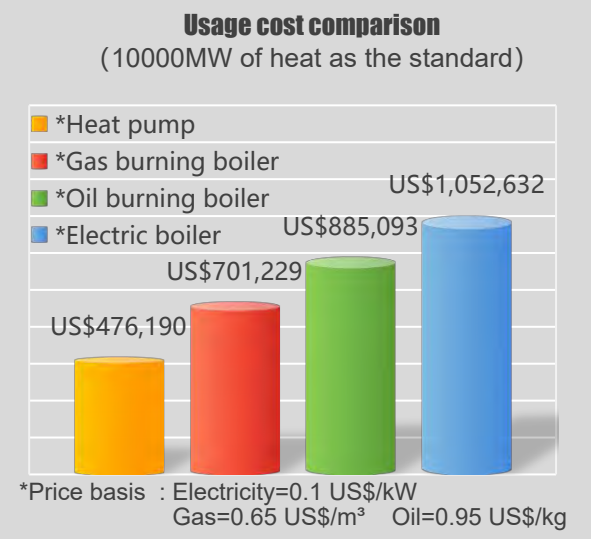
1	Compressor	2	Water heat exchanger
3	Four way valve	4	Dry filter
5	Expansion valve	6	Air source heat exchanger
7	Gas liquid separator	8	Axial fans
9	Inverter（Optional）	10	Electrical box
11	Flow switch		

PRODUCT FEATURES

01 MAX. hot water temp. 80℃， Can replace the boiler， Lower cost

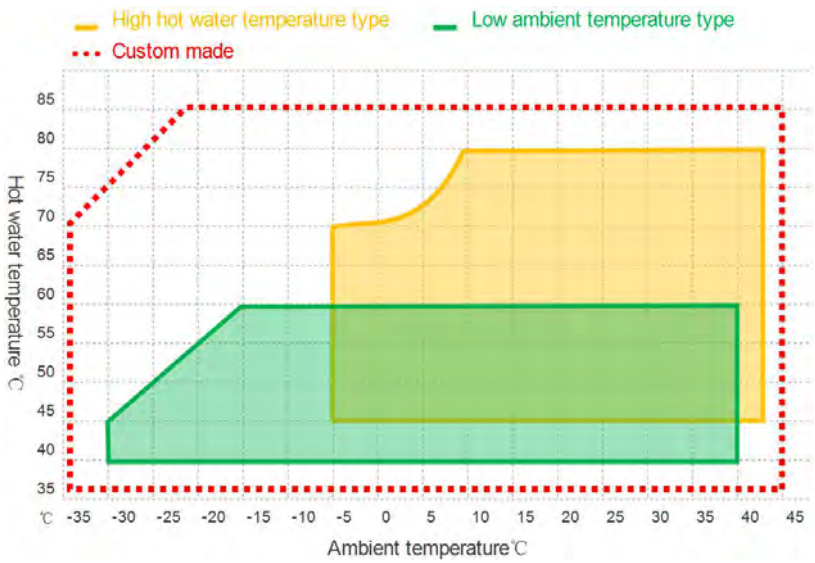
- AR-DA series heat pump can produce 80℃hot water,the same operating temperature as standard hot water boiler,can be used to replace boilers.
- Heat pump COP higher, operating costs only 30%-50% of the boiler,will save users a lot of operating costs.





02 MIN. ambient temp-30℃， Wider use area

- The heat pump use EVI technology that stably supply 45℃hot water at -30℃ ambient temperature and still has high COP, which allows the heat pump to be applied in colder areas



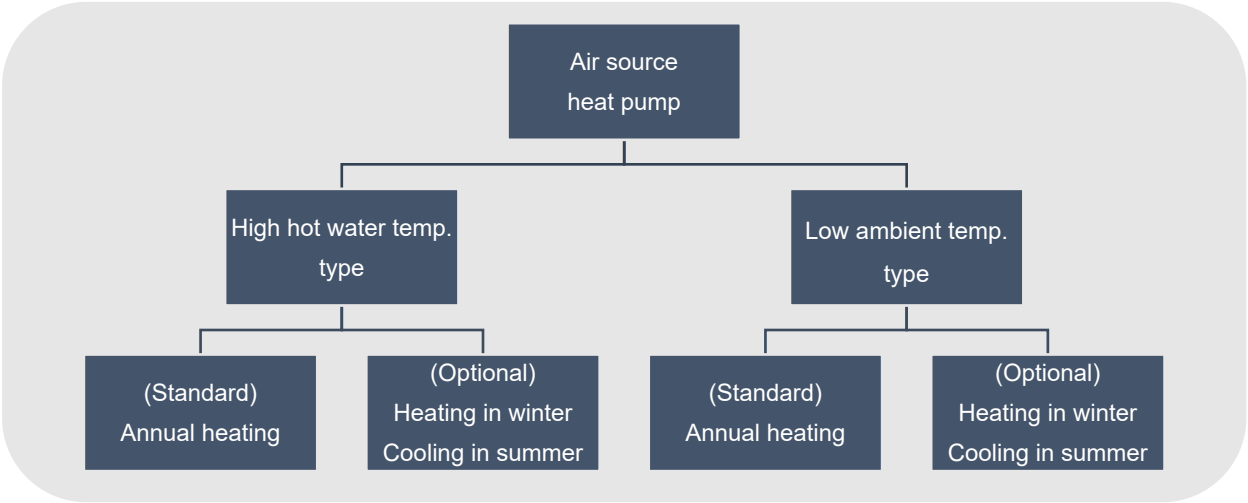


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PRODUCT FEATURES

03 More options

- Heat pump can choose a variety of functional forms,so that it can meet different areas, different requirements for use.
- The heat pump can be customized according to the special requirements of the user when the basic function is realized, which will make the heat pump more suitable for the actual use requirements.



04 Environmental protection refrigerant， reduce the impact on the environment

- Use HFC R410a refrigerant (ODP=0,GWP=2100) for low ambient temperature type heat pump
- Use HFC R134a refrigerant (ODP=0,GWP=1300) for high hot water temperature type heat pump
- Also can select HFO R1234ze refrigerant (ODP=0,GWP < 1) for high hot water temperature type heat pump,this will achieve full protection of the environment and meet the highest standards of environmental protection.





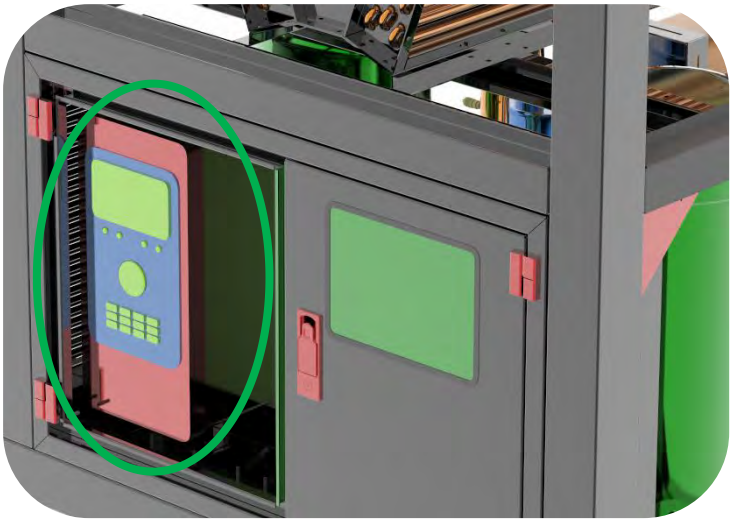


PRODUCT FEATURES

05 VSD load output (Optional)

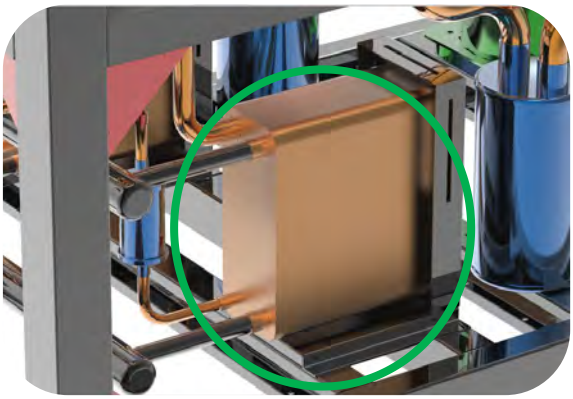
- Using VFD compressor, can achieve 25Hz -100Hz load output, to provide heat quickly; And partial load will be much higher COP,can save 30%-45% of operating cost.

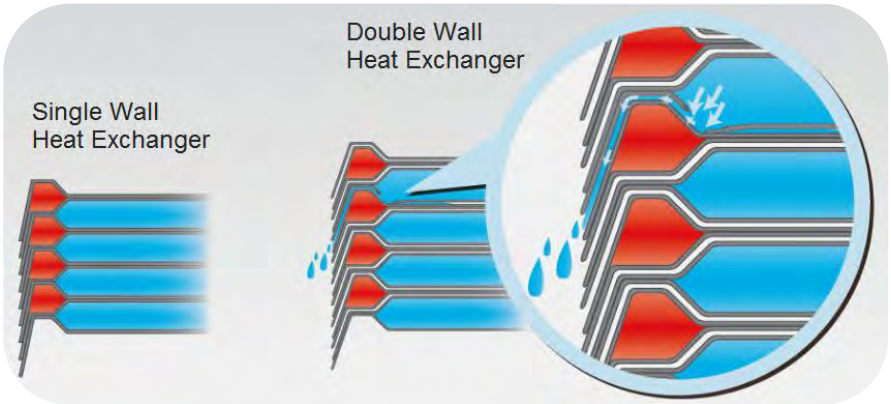




06 The safest water heat exchange system

- Optional double wall heat exchanger,can insulate leakage between heat pump refrigerant system and water system,avoid cross-contamination,to maximum guarantees the safety of heat pumps and user water systems.
- When there is a slight leak, you can visually find the leak point, easy to quickly repair.



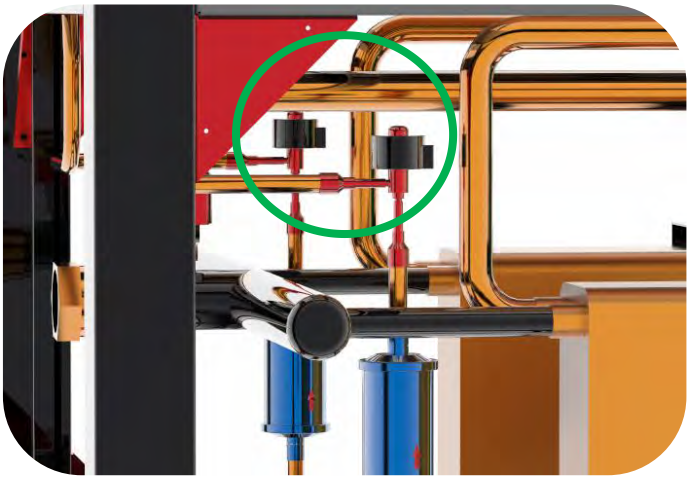


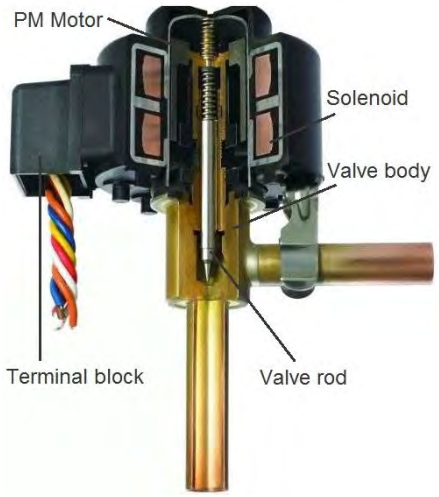
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PRODUCT FEATURES

07 High precision EEV

- Use EEV, match frequency conversion load output, can accurately control water temperature.
- Protect the heat pump can operate stablely under extreme conditions.





08 High strength fans， Lower noise

- Metal blades, higher strength, longer service life, lower failure rate
- Motor with low speed and high torque, noise as low as 72 dB (A)
- Optional EC axial fan, lower energy consumption, higher efficiency, noise as low as 64 dB (A)



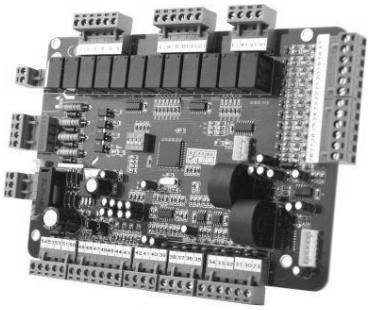


PRODUCT FEATURES

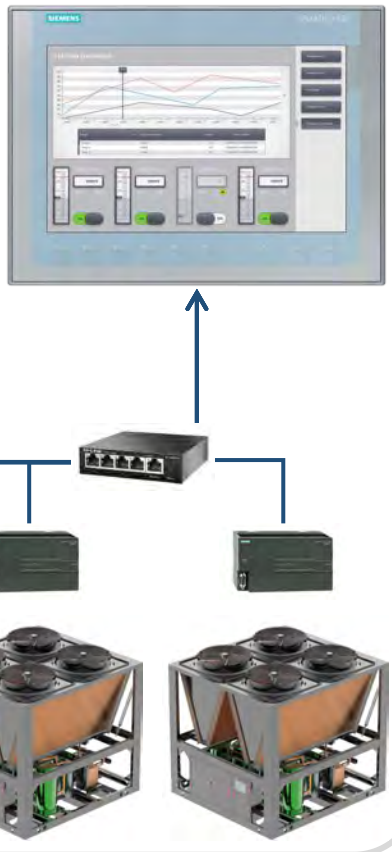
09 Multi-Function Control System

- Standard product offers a Micro Processor-based unit controller and includes features such as:
  - Fan speed control
  - Random-start delay
  - Defrosting function
  - Compressor anti-shot protection
  - Built-in night setback and night setup
  - operation from a remote signal
  - 2-hour override operation from a push
  - button on the wall thermostat
  - LED diagnostic display
  - High and low voltage protection
  - Low pressure switch bypass
  - Safety lockout
  - Others: optional automatic reset, starup delay, fan interlock, lockout alarm and dry contacts
  - Modbus(Optional)
  - BAC-net(Optional)





- Equipped with PLC control system, it can realize intelligent control function and higher control precision,for example, more heat pumps are used in industry sector (especially chemical industry/pharmaceutical industry/laboratory and other precision manufacturing industries), need heat pump to supplying high-precision hot water.
- When the heat pump is required to work together with other equipment ,PLC control system facilitates centralized management and enables group or individual control according to user- freely set requirements,In the subsequent use process, when the user needs to add / adjust the control function, our engineer can realize these new requirements by modifying the control program, which will make the user's use more flexible and convenient.

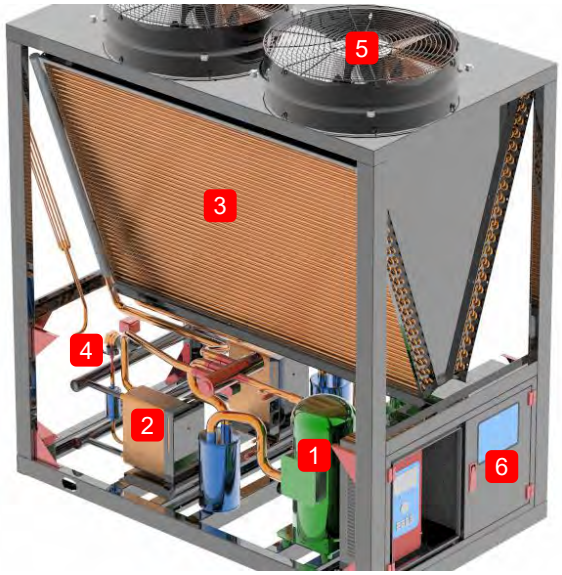


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PRODUCT CUSTOMIZATION

Power Supply Optional

A: 380-420V/3N-50Hz(Standard)
B: 220-240V/1N-50Hz
C: 220-240V/3N-50Hz
D: 380-420V/3N-60Hz
E: 220-230V/3N-60Hz
F: 440-480V/3N-60Hz
G: 220-230V/1N-60Hz



Refrigerant Optional

Q: R410a (Standard) GWP=1924	The environment-friendly refrigerant, global universal.
M: R134a GWP=1300	The environment-friendly refrigerant,can produce high temperature hot water efficiently.
U: R1234ze GWP < 1	The latest environment-friendly refrigerant, in line with the highest environmental standards.

Compressor Optional 1

Scroll compressor (Standard)	VFD compressor
	
● Stable performance output. ● Adaptation to more use environments. ● High cost-performance ratio. ● Low failure rate.	● High precision variable load output. ● Rapid cooling/heating. ● COP increased to 15%~20% in partial load condition

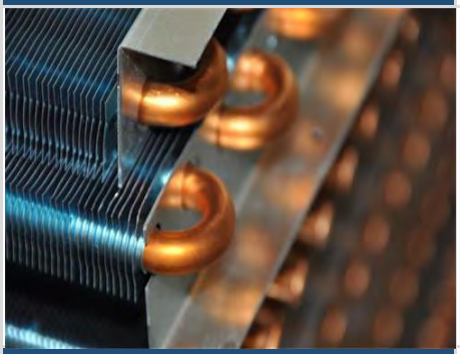
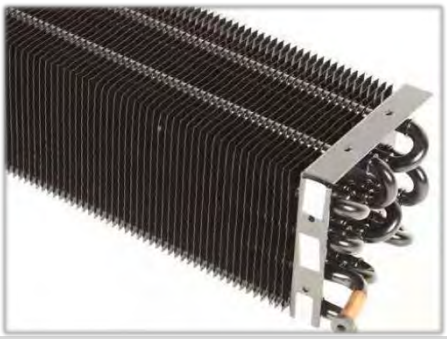
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PRODUCT CUSTOMIZATION

Water Heat Exchanger Optional 2

Brazed Plate Heat Exchanger (Standard)	Nickel Brazed Plate Heat Exchanger	Double wall Heat Exchanger
		
● Highest Heat Exchange Efficiency. ● Minimum size structure. ● High cost-performance ratio.	● Good corrosion resistant performance. ● suitable for pure water.	● The highest hygienic grade. ● The safest water heat exchanger.

Air Coil Optional 3

Aluminum finned Coil (Standard)	Epoxy Coated finned Coil	Copper Finned Coil
		
● Reduces failures caused by most airborne chemicals. ● Polyester coating. ● Does not reduce capacity. ● No bridging of the fins.	● Good corrosion prevention. ● Suitable for minor corrosive areas. ● Suitable for more than 200 meters from the seaside.	● Good heat exchange efficiency. ● Best anticorrosion performance. ● Suitable for seaside/island/ship. ● Suitable for strong corrosion area.

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PRODUCT CUSTOMIZATION

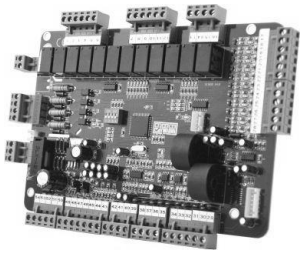
Expansion Valve Optional 4

Thermal Expansion Valve (Standard)	Electronic Expansion Valve
	
● Mechanical structure, stable performance. ● MOP protection function.	● High-precision adjustment. ● Quick response. ● More comprehensive system protection function.

Fan Motor Optional 5

AC motor (Standard)	EC Motor
	
● High cost-performance ratio. ● Low failure rate.	● Higher efficiency. ● Lower noise.

Control System Optional 6

Micro Processor Controller (Standard)	PLC Controller
	
● Integrated control/monitoring/protection functions. ● Extensible Modbus / BAC net functions.	● More complex control functions can be achieved. ● Higher control accuracy. ● Facilitate cluster control.

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PRODUCT PARAMETERS

(Rated per GB/T18430-2016 standard) **High Hot Water Temp.Type**

Heating capacity is based on 15℃ entering air and 60℃/70℃ entering/leaving hot water

AR-DA (***)	Unit	18H	24H	28H	36H	48H	56H	72H	96H
Heating capacity	kW	18.3	23.7	27.9	36.5	47.5	55.8	73.0	95.0
Rating input power	kW	7.8	10.1	12.5	15.6	20.2	25.1	31.1	40.5
Rating current	A	13.7	17.8	22.0	27.5	35.6	44.2	54.7	71.3
Max. running current	A	22	29	32	44	58	64	88	116
Water flow	m³/h	1.6	2.0	2.4	3.1	4.1	4.8	6.3	8.2
Water pressure drop	kPa	32	34	32	36	35	34	35	33
Refrigerant type		R134a							
Refrigerant Charge	kg	5.2	7.8	9.6	10.4	15.6	19.2	20.8	31.2

(Rated per GB/T25127-2010 standard) **Low Ambient Temp.Type**

Heating capacity is based on -15℃ entering air and 40℃/45℃ entering/leaving hot water

AR-DA (***)	Unit	18L	24L	28L	36L	48L	56L	72L	96L
Heating capacity	kW	7.8	10.2	11.9	15.6	20.3	23.9	31.3	40.7
Rating input power	kW	3.2	4.2	5.2	6.4	8.3	10.3	12.8	16.7
Rating current	A	5.6	7.4	9.2	11.3	14.6	18.1	22.5	29.4
Max. running current	A	14	18	20	28	36	40	56	72
Water flow	m³/h	1.3	1.8	2.0	2.7	3.5	4.1	5.4	7.0
Water pressure drop	kPa	28	31	29	32	32	31	31	29
Refrigerant type		R410a							
Refrigerant charge	kg	6.0	8.5	10.8	12.0	17.0	21.6	24.0	34.0
Power supply		380V-420V/3N～/50Hz							
Compressor	Type / Number	Scroll*1			Scroll*2			Scroll*4	
	Starting method	Direct start							
	Capacity adjustment (Class)	N/A			2			4	
Air source heat exchanger	Type	Finned tube heat exchanger							
	Fan type	Low noise axial fan							
	Fans number (Set)	1				2			
Hot water heat exchanger	Type	Brazed plate heat exchanger							
	Connection pipe	Rc 1-1/2”				Rc 2”			
	Max. working pressure (MPa)	1.6							
Outline dimension (L*W*H) (mm)		1050*1050*2000				1800*1050*2000			
Weight	Shipping weight (kg)	260	290	340	560	580	650	850	950
	Operating weight (kg)	280	310	370	600	640	710	930	1030

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PRODUCT PARAMETERS

(Rated per GB/T18430-2016 standard) **High Hot Water Temp.Type**

Heating capacity is based on 15℃ entering air and 60℃/70℃ entering/leaving hot water

AR-DA (***)	Unit	112H	144H	168H	224H	280H	336H	390H
Heating capacity	kW	111.6	142.5	167.3	223.1	278.9	334.7	390.4
Rating input power	kW	50.1	60.7	75.2	100.3	125.4	150.4	175.5
Rating current	A	88.2	106.8	132.4	176.6	220.7	264.7	308.9
Max. running current	A	128	174	192	290	320	384	448
Water flow	m³/h	9.6	12.3	14.4	19.2	24.0	28.8	33.6
Water pressure drop	kPa	37	38	42	41	40	44	48
Refrigerant type		R134a						
Refrigerant Charge	kg	38.4	46.8	57.6	78	96	115.2	134.4

(Rated per GB/T25127-2010 standard) **Low Ambient Temp.Type**

Heating capacity is based on -15℃ entering air and 40℃/45℃ entering/leaving hot water

AR-DA (***)	Unit	112L	144L	168L	224L	280L	336L	390L
Heating capacity	kW	47.7	61.0	71.6	95.4	119.3	143.2	167.0
Rating input power	kW	20.7	25.0	31.0	41.4	51.7	62.1	72.4
Rating current	A	36.4	44.0	54.6	72.9	91.0	109.3	127.4
Max. running current	A	80	108	120	180	200	240	280
Water flow	m³/h	8.2	10.5	12.3	16.4	20.5	24.6	28.7
Water pressure drop	kPa	32	33	34	35	34	34	36
Refrigerant type		R410a						
Refrigerant charge	kg	43.2	51.0	64.8	85.0	108.0	129.6	151.2

Power supply			380V-420V/3N～/50Hz						
Compressor	Type / Number		Scroll*4	Scroll*6		Scroll*8	Scroll*10	Scroll*12	
	Starting method		Direct start						
	Capacity adjustment	Class	4	6		8	10	12	
Air source heat exchanger	Type		Finned tube heat exchanger						
	Fan type		Low noise axial fan						
	Fans number	Set	2	2	4			6	
Hot water heat exchanger	Type		Brazed plate heat exchanger						
	Connection pipe		Rc 2”		DN65(FLG)			DN80(FLG)	
	Max. working pressure	MPa	1.6						
Outline dimension (L*W*H)		mm	2100*1050*2000		2400*2200*2245			3500*2200*2245	
Weight	Shipping weight	kg	1060	1180	1580	1740	1880	2420	2580
	Operating weight	kg	1150	1280	1760	1920	2120	2690	2850

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VARIABLE WORKING CONDITION DATA 1/15

AR-DA18H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								2.6	2.4
			HEAT(KW)	Low Ambient Temp. Type							5.0	4.8
			COP(W/W)								1.9	2.0
	-25	-13	POWER(KW)	High Hot Water Temp.Type						3.0	2.8	2.6
			HEAT(KW)							5.9	5.8	5.6
			COP(W/W)							2.0	2.1	2.1
	-20	-4	POWER(KW)							3.3	3.0	2.8
			HEAT(KW)							6.8	6.7	6.5
			COP(W/W)							2.1	2.3	2.3
	-15	5	POWER(KW)					4.4	3.9	3.5	3.2	3.0
			HEAT(KW)					7.8	7.9	7.9	7.8	7.7
			COP(W/W)					1.8	2.0	2.3	2.4	2.6
	-10	14	POWER(KW)					4.7	4.2	3.8	3.5	3.2
			HEAT(KW)					9.0	9.1	9.1	9.1	9.0
			COP(W/W)					1.9	2.2	2.4	2.6	2.8
	-5	23	POWER(KW)			6.5	5.7	5.1	4.5	4.1	3.7	3.5
			HEAT(KW)			9.8	10.1	10.4	10.5	10.6	10.6	10.6
			COP(W/W)			1.5	1.8	2.1	2.3	2.6	2.8	3.1
	0	32	POWER(KW)			6.8	6.1	5.4	4.8	4.4	4.0	3.7
			HEAT(KW)			11.4	11.7	11.9	12.1	12.2	12.3	12.4
			COP(W/W)			1.7	1.9	2.2	2.5	2.8	3.1	3.3
	5	41	POWER(KW)			7.2	6.5	5.8	5.2	4.7	4.3	4.0
			HEAT(KW)			13.4	13.7	14.0	14.2	14.4	14.6	14.8
			COP(W/W)			1.9	2.1	2.4	2.7	3.1	3.4	3.7
	10	50	POWER(KW)		9.4	7.5	6.8	6.1	5.5	5.0	4.6	4.2
			HEAT(KW)		16.4	15.7	16.0	16.3	16.6	16.9	17.3	17.6
			COP(W/W)		1.7	2.1	2.4	2.7	3.0	3.4	3.8	4.2
	15	59	POWER(KW)		9.7	7.8	7.0	6.4	5.8	5.2	4.8	4.4
			HEAT(KW)		18.9	18.3	18.6	19.0	19.4	19.8	20.3	20.9
			COP(W/W)		2.0	2.3	2.7	3.0	3.4	3.8	4.2	4.8
	20	68	POWER(KW)	9.8	8.9	8.0	7.3	6.6	6.0	5.5	5.0	4.6
			HEAT(KW)	20.2	20.7	21.1	21.6	22.0	22.6	23.2	23.9	24.7
			COP(W/W)	2.1	2.3	2.6	3.0	3.3	3.7	4.2	4.7	5.4
	25	77	POWER(KW)	10.0	9.1	8.3	7.6	6.9	6.4	5.8	5.3	4.9
			HEAT(KW)	23.3	23.8	24.3	24.9	25.5	26.2	27.0	28.0	29.1
			COP(W/W)	2.3	2.6	2.9	3.3	3.7	4.1	4.6	5.2	5.9
	30	86	POWER(KW)	10.3	9.4	8.7	8.0	7.3	6.8	6.2	5.7	5.3
			HEAT(KW)	26.6	27.2	27.9	28.6	29.4	30.4	31.4	32.6	34.0
			COP(W/W)	2.6	2.9	3.2	3.6	4.0	4.5	5.0	5.7	6.4
	35	95	POWER(KW)	10.7	9.9	9.1	8.5	7.9	7.3	6.8	6.3	5.8
			HEAT(KW)	30.4	31.1	31.9	32.8	33.8	35.0	36.4	37.9	39.6
			COP(W/W)	2.8	3.2	3.5	3.9	4.3	4.8	5.4	6.0	6.8
	40	104	POWER(KW)	11.2	10.4	9.7	9.1	8.5	8.0	7.5	7.0	6.5
			HEAT(KW)	34.5	35.4	36.4	37.5	38.8	40.3	41.9	43.8	45.9
			COP(W/W)	3.1	3.4	3.7	4.1	4.6	5.0	5.6	6.3	7.1

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 2/15

AR-DA24H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								3.3	3.2
			HEAT(KW)	Low Ambient Temp. Type							6.5	6.2
			COP(W/W)								1.9	2.0
	-25	-13	POWER(KW)	High Hot Water Temp.Type						3.9	3.6	3.4
			HEAT(KW)							7.7	7.5	7.3
			COP(W/W)							2.0	2.1	2.1
	-20	-4	POWER(KW)							4.2	3.9	3.6
			HEAT(KW)							8.9	8.7	8.5
			COP(W/W)							2.1	2.3	2.3
	-15	5	POWER(KW)					5.7	5.1	4.6	4.2	3.9
			HEAT(KW)					10.2	10.3	10.3	10.2	10.0
			COP(W/W)					1.8	2.0	2.3	2.4	2.6
	-10	14	POWER(KW)					6.1	5.5	4.9	4.5	4.2
			HEAT(KW)					11.7	11.9	11.9	11.8	11.7
			COP(W/W)					1.9	2.2	2.4	2.6	2.8
	-5	23	POWER(KW)			8.4	7.4	6.6	5.9	5.3	4.8	4.5
			HEAT(KW)			12.8	13.2	13.5	13.7	13.7	13.7	13.7
			COP(W/W)			1.5	1.8	2.1	2.3	2.6	2.8	3.1
	0	32	POWER(KW)			8.9	7.9	7.0	6.3	5.7	5.2	4.8
			HEAT(KW)			14.8	15.2	15.5	15.7	15.9	16.0	16.1
			COP(W/W)			1.7	1.9	2.2	2.5	2.8	3.1	3.3
	5	41	POWER(KW)			9.4	8.4	7.5	6.8	6.1	5.6	5.2
			HEAT(KW)			17.5	17.9	18.2	18.5	18.7	19.0	19.2
			COP(W/W)			1.9	2.1	2.4	2.7	3.1	3.4	3.7
	10	50	POWER(KW)		12.3	9.8	8.8	7.9	7.1	6.5	5.9	5.4
			HEAT(KW)		21.3	20.4	20.9	21.2	21.6	22.0	22.4	22.9
			COP(W/W)		1.7	2.1	2.4	2.7	3.0	3.4	3.8	4.2
	15	59	POWER(KW)		12.6	10.1	9.1	8.3	7.5	6.8	6.2	5.7
			HEAT(KW)		24.6	23.7	24.2	24.7	25.2	25.8	26.5	27.2
			COP(W/W)		2.0	2.3	2.7	3.0	3.4	3.8	4.2	4.8
	20	68	POWER(KW)	12.7	11.5	10.4	9.5	8.6	7.8	7.2	6.5	6.0
			HEAT(KW)	26.3	26.9	27.4	28.0	28.9	29.4	30.2	31.1	32.1
			COP(W/W)	2.1	2.3	2.6	3.0	3.4	3.7	4.2	4.7	5.4
	25	77	POWER(KW)	13.0	11.9	10.8	9.9	9.0	8.3	7.6	6.9	6.4
			HEAT(KW)	30.3	30.9	31.6	32.3	33.2	34.1	35.2	36.4	37.8
			COP(W/W)	2.3	2.6	2.9	3.3	3.7	4.1	4.6	5.2	5.9
	30	86	POWER(KW)	13.4	12.3	11.3	10.4	9.5	8.8	8.1	7.5	6.9
			HEAT(KW)	34.6	35.4	36.2	37.2	38.2	39.5	40.9	42.4	44.2
			COP(W/W)	2.6	2.9	3.2	3.6	4.0	4.5	5.0	5.7	6.4
	35	95	POWER(KW)	13.9	12.8	11.9	11.0	10.2	9.5	8.8	8.2	7.5
			HEAT(KW)	39.5	40.4	41.5	42.7	44.0	45.5	47.3	49.3	51.5
			COP(W/W)	2.8	3.2	3.5	3.9	4.3	4.8	5.4	6.0	6.8
	40	104	POWER(KW)	14.5	13.6	12.7	11.8	11.1	10.4	9.7	9.1	8.5
			HEAT(KW)	44.9	46.0	47.3	48.8	50.5	52.4	54.5	57.0	59.7
			COP(W/W)	3.1	3.4	3.7	4.1	4.6	5.0	5.6	6.3	7.1

VARIABLE WORKING CONDITION DATA 3/15

AR-DA28H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								4.1	3.9
			HEAT(KW)	Low Ambient Temp. Type							7.7	7.3
			COP(W/W)								1.8	1.9
	-25	-13	POWER(KW)	High Hot Water Temp.Type						4.9	4.5	4.2
			HEAT(KW)							9.1	8.9	8.6
			COP(W/W)							1.9	2.0	2.0
	-20	-4	POWER(KW)							5.2	4.8	4.5
			HEAT(KW)							10.5	10.3	10.0
			COP(W/W)							2.0	2.1	2.2
	-15	5	POWER(KW)					7.1	6.3	5.6	5.2	4.8
			HEAT(KW)					12.1	12.2	12.1	11.9	11.7
			COP(W/W)					1.7	1.9	2.1	2.3	2.4
	-10	14	POWER(KW)					7.6	6.8	6.1	5.6	5.2
			HEAT(KW)					13.9	14.0	13.9	13.8	13.7
			COP(W/W)					1.8	2.1	2.3	2.5	2.6
	-5	23	POWER(KW)			10.4	9.2	8.1	7.3	6.6	6.0	5.6
			HEAT(KW)			15.3	15.7	15.9	16.0	16.1	16.0	16.0
			COP(W/W)			1.5	1.7	2.0	2.2	2.5	2.7	2.9
	0	32	POWER(KW)			11.0	9.8	8.7	7.8	7.1	6.5	6.0
			HEAT(KW)			17.7	18.0	18.3	18.4	18.5	18.6	18.7
			COP(W/W)			1.6	1.8	2.1	2.4	2.6	2.9	3.1
	5	41	POWER(KW)			11.6	10.4	9.3	8.4	7.6	6.9	6.4
			HEAT(KW)			20.8	21.1	21.3	21.6	21.8	22.0	22.3
			COP(W/W)			1.8	2.0	2.3	2.6	2.9	3.2	3.5
	10	50	POWER(KW)		15.2	12.1	10.9	9.8	8.9	8.0	7.3	6.7
			HEAT(KW)		25.4	24.1	24.5	24.8	25.2	25.5	25.9	26.4
			COP(W/W)		1.7	2.0	2.2	2.5	2.8	3.2	3.5	3.9
	15	59	POWER(KW)		15.6	12.5	11.3	10.2	9.3	8.4	7.7	7.1
			HEAT(KW)		29.1	27.9	28.3	28.8	29.3	29.8	30.5	31.3
			COP(W/W)		1.9	2.2	2.5	2.8	3.2	3.5	4.0	4.4
	20	68	POWER(KW)	15.8	14.3	12.9	11.7	10.7	9.7	8.9	8.1	7.4
			HEAT(KW)	31.1	31.6	32.1	32.6	33.5	34.0	34.8	35.8	36.9
			COP(W/W)	2.0	2.2	2.5	2.8	3.1	3.5	3.9	4.4	5.0
	25	77	POWER(KW)	16.1	14.7	13.4	12.2	11.2	10.2	9.4	8.6	7.9
			HEAT(KW)	35.5	36.1	36.8	37.5	38.4	39.3	40.5	41.8	43.3
			COP(W/W)	2.2	2.5	2.7	3.1	3.4	3.8	4.3	4.9	5.5
	30	86	POWER(KW)	16.6	15.2	14.0	12.8	11.8	10.9	10.0	9.3	8.5
			HEAT(KW)	40.4	41.3	42.1	43.1	44.2	45.4	46.9	48.6	50.6
			COP(W/W)	2.4	2.7	3.0	3.4	3.7	4.2	4.7	5.3	5.9
	35	95	POWER(KW)	17.2	15.9	14.7	13.6	12.7	11.7	10.9	10.1	9.4
			HEAT(KW)	45.9	47.0	48.1	49.3	50.7	52.4	54.3	56.4	58.9
			COP(W/W)	2.7	3.0	3.3	3.6	4.0	4.5	5.0	5.6	6.3
	40	104	POWER(KW)	18.0	16.8	15.7	14.3	13.2	12.9	12.0	11.3	10.5
			HEAT(KW)	52.1	53.4	54.8	56.3	59.1	60.2	62.5	65.2	68.2
			COP(W/W)	2.9	3.2	3.5	3.9	4.5	4.7	5.2	5.8	6.5

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 4/15

AR-DA36H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								5.1	4.9
			HEAT(KW)	Low Ambient Temp. Type							9.9	9.5
			COP(W/W)								1.9	2.0
	-25	-13	POWER(KW)	High Hot Water Temp.Type						6.0	5.5	5.2
			HEAT(KW)							11.8	11.6	11.2
			COP(W/W)							2.0	2.1	2.1
	-20	-4	POWER(KW)							6.5	6.0	5.6
			HEAT(KW)							13.7	13.5	13.1
			COP(W/W)							2.1	2.3	2.3
	-15	5	POWER(KW)					8.8	7.8	7.0	6.4	6.0
			HEAT(KW)					15.7	15.8	15.8	15.6	15.4
			COP(W/W)					1.8	2.0	2.3	2.4	2.6
	-10	14	POWER(KW)					9.5	8.4	7.6	6.9	6.4
			HEAT(KW)					18.0	18.2	18.3	18.2	18.0
			COP(W/W)					1.9	2.2	2.4	2.6	2.8
	-5	23	POWER(KW)			13.0	11.4	10.1	9.0	8.1	7.4	6.9
			HEAT(KW)			19.6	20.3	20.7	21.0	21.1	21.2	21.1
			COP(W/W)			1.5	1.8	2.1	2.3	2.6	2.8	3.1
	0	32	POWER(KW)			13.7	12.1	10.8	9.7	8.8	8.0	7.4
			HEAT(KW)			22.7	23.4	23.9	24.2	24.4	24.6	24.7
			COP(W/W)			1.7	1.9	2.2	2.5	2.8	3.1	3.3
	5	41	POWER(KW)			14.5	12.9	11.6	10.4	9.4	8.6	7.9
			HEAT(KW)			26.9	27.5	28.0	28.4	28.8	29.2	29.6
			COP(W/W)			1.9	2.1	2.4	2.7	3.1	3.4	3.7
	10	50	POWER(KW)		18.8	15.1	13.5	12.2	11.0	10.0	9.1	8.4
			HEAT(KW)		32.8	31.5	32.1	32.7	33.3	33.9	34.5	35.3
			COP(W/W)		1.7	2.1	2.4	2.7	3.0	3.4	3.8	4.2
	15	59	POWER(KW)		19.4	15.6	14.0	12.7	11.5	10.5	9.6	8.8
			HEAT(KW)		37.9	36.5	37.3	38.0	38.8	39.7	40.7	41.8
			COP(W/W)		2.0	2.3	2.7	3.0	3.4	3.8	4.2	4.8
	20	68	POWER(KW)	19.6	17.7	16.1	14.6	13.3	12.1	11.0	10.1	9.2
			HEAT(KW)	40.5	41.3	42.2	43.1	44.0	45.2	46.4	47.8	49.4
			COP(W/W)	2.1	2.3	2.6	3.0	3.3	3.7	4.2	4.7	5.4
	25	77	POWER(KW)	20.0	18.2	16.6	15.2	13.9	12.7	11.7	10.7	9.8
			HEAT(KW)	46.5	47.5	48.6	49.8	51.0	52.4	54.1	56.0	58.1
			COP(W/W)	2.3	2.6	2.9	3.3	3.7	4.1	4.6	5.2	5.9
	30	86	POWER(KW)	20.6	18.9	17.3	15.9	14.7	13.5	12.5	11.5	10.6
			HEAT(KW)	53.3	54.4	55.7	57.2	58.8	60.7	62.8	65.3	68.0
			COP(W/W)	2.6	2.9	3.2	3.6	4.0	4.5	5.0	5.7	6.4
	35	95	POWER(KW)	21.3	19.7	18.3	16.9	15.7	14.6	13.5	12.6	11.6
			HEAT(KW)	60.8	62.2	63.8	65.6	67.7	70.1	72.7	75.8	79.2
			COP(W/W)	2.8	3.2	3.5	3.9	4.3	4.8	5.4	6.0	6.8
	40	104	POWER(KW)	22.4	20.9	19.5	18.2	17.1	16.0	14.9	14.0	13.0
			HEAT(KW)	69.1	70.8	72.8	75.1	77.7	80.6	83.9	87.6	91.8
			COP(W/W)	3.1	3.4	3.7	4.1	4.6	5.0	5.6	6.3	7.1

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 5/15

AR-DA48H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								6.7	6.3
			HEAT(KW)	Low Ambient Temp. Type							12.9	12.4
			COP(W/W)								1.9	2.0
	-25	-13	POWER(KW)	High Hot Water Temp.Type						7.9	7.2	6.8
			HEAT(KW)							15.4	15.0	14.5
			COP(W/W)							2.0	2.1	2.1
	-20	-4	POWER(KW)							8.5	7.7	7.3
			HEAT(KW)							17.8	17.5	17.0
			COP(W/W)							2.1	2.3	2.3
	-15	5	POWER(KW)					11.5	10.2	9.1	8.3	7.8
			HEAT(KW)					20.4	20.6	20.6	20.3	20.0
			COP(W/W)					1.8	2.0	2.3	2.4	2.6
	-10	14	POWER(KW)					12.3	10.9	9.8	9.0	8.4
			HEAT(KW)					23.4	23.7	23.8	23.6	23.4
			COP(W/W)					1.9	2.2	2.4	2.6	2.8
	-5	23	POWER(KW)			16.9	14.8	13.1	11.7	10.6	9.7	9.0
			HEAT(KW)			25.5	26.4	27.0	27.3	27.5	27.5	27.4
			COP(W/W)			1.5	1.8	2.1	2.3	2.6	2.8	3.1
	0	32	POWER(KW)			17.8	15.8	14.1	12.6	11.4	10.4	9.6
			HEAT(KW)			29.6	30.4	31.0	31.4	31.8	32.0	32.2
			COP(W/W)			1.7	1.9	2.2	2.5	2.8	3.1	3.3
	5	41	POWER(KW)			18.8	16.8	15.0	13.5	12.3	11.2	10.3
			HEAT(KW)			35.0	35.7	36.4	36.9	37.4	37.9	38.5
			COP(W/W)			1.9	2.1	2.4	2.7	3.1	3.4	3.7
	10	50	POWER(KW)		24.5	19.6	17.6	15.8	14.3	13.0	11.9	10.9
			HEAT(KW)		42.6	40.9	41.7	42.5	43.2	44.0	44.9	45.8
			COP(W/W)		1.7	2.1	2.4	2.7	3.0	3.4	3.8	4.2
	15	59	POWER(KW)		25.2	20.2	18.3	16.5	15.0	13.6	12.4	11.4
			HEAT(KW)		49.2	47.5	48.4	49.4	50.5	51.6	52.9	54.4
			COP(W/W)		2.0	2.3	2.7	3.0	3.4	3.8	4.2	4.8
	20	68	POWER(KW)	25.5	23.0	20.9	19.0	17.2	15.7	14.3	13.1	12.0
			HEAT(KW)	52.6	53.7	54.9	56.1	57.7	58.7	60.3	62.2	64.3
			COP(W/W)	2.1	2.3	2.6	3.0	3.4	3.7	4.2	4.7	5.4
	25	77	POWER(KW)	26.0	23.7	21.6	19.7	18.1	16.5	15.1	13.9	12.7
			HEAT(KW)	60.5	61.8	63.2	64.6	66.3	68.2	70.3	72.8	75.6
			COP(W/W)	2.3	2.6	2.9	3.2	3.6	4.1	4.6	5.2	5.9
	30	86	POWER(KW)	26.8	24.5	22.5	20.7	19.1	17.6	16.2	14.9	13.7
			HEAT(KW)	69.3	70.8	72.5	74.4	76.5	78.9	81.7	84.9	88.5
			COP(W/W)	2.6	2.9	3.2	3.6	4.0	4.5	5.0	5.7	6.4
	35	95	POWER(KW)	27.7	25.6	23.7	22.0	20.4	19.0	17.6	16.3	15.1
			HEAT(KW)	79.0	80.8	82.9	85.3	88.0	91.1	94.6	98.5	103.0
			COP(W/W)	2.8	3.2	3.5	3.9	4.3	4.8	5.4	6.0	6.8
	40	104	POWER(KW)	29.1	27.1	25.3	23.7	22.2	20.8	19.4	18.2	16.9
			HEAT(KW)	89.8	92.1	94.7	97.6	101.0	104.8	109.1	113.9	119.4
			COP(W/W)	3.1	3.4	3.7	4.1	4.6	5.0	5.6	6.3	7.1

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 6/15

AR-DA56H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								8.3	7.9
			HEAT(KW)	Low Ambient Temp. Type							15.3	14.6
			COP(W/W)								1.8	1.9
	-25	-13	POWER(KW)	High Hot Water Temp.Type						9.7	8.9	8.4
			HEAT(KW)							18.2	17.7	17.1
			COP(W/W)							1.9	2.0	2.0
	-20	-4	POWER(KW)							10.5	9.6	9.0
			HEAT(KW)							21.0	20.6	20.0
			COP(W/W)							2.0	2.1	2.2
	-15	5	POWER(KW)					14.2	12.6	11.3	10.3	9.7
			HEAT(KW)					24.3	24.4	24.2	23.9	23.4
			COP(W/W)					1.7	1.9	2.1	2.3	2.4
	-10	14	POWER(KW)					15.2	13.5	12.2	11.1	10.4
			HEAT(KW)					27.8	28.0	27.9	27.7	27.3
			COP(W/W)					1.8	2.1	2.3	2.5	2.6
	-5	23	POWER(KW)			20.9	18.4	16.3	14.5	13.1	12.0	11.1
			HEAT(KW)			30.6	31.4	31.9	32.1	32.2	32.1	31.9
			COP(W/W)			1.5	1.7	2.0	2.2	2.5	2.7	2.9
	0	32	POWER(KW)			22.1	19.6	17.4	15.6	14.1	12.9	11.9
			HEAT(KW)			35.3	36.0	36.5	36.8	37.1	37.2	37.3
			COP(W/W)			1.6	1.8	2.1	2.4	2.6	2.9	3.1
	5	41	POWER(KW)			23.3	20.8	18.6	16.8	15.2	13.9	12.8
			HEAT(KW)			41.6	42.2	42.7	43.1	43.6	44.0	44.5
			COP(W/W)			1.8	2.0	2.3	2.6	2.9	3.2	3.5
	10	50	POWER(KW)		30.4	24.3	21.8	19.6	17.7	16.1	14.7	13.5
			HEAT(KW)		50.8	48.3	49.0	49.6	50.3	51.0	51.9	52.9
			COP(W/W)		1.7	2.0	2.2	2.5	2.8	3.2	3.5	3.9
	15	59	POWER(KW)		31.2	25.1	22.6	20.5	18.6	16.9	15.4	14.1
			HEAT(KW)		58.3	55.8	56.6	57.5	58.5	59.7	61.0	62.6
			COP(W/W)		1.9	2.2	2.5	2.8	3.2	3.5	4.0	4.4
	20	68	POWER(KW)	31.5	28.6	25.9	23.5	21.4	19.4	17.7	16.2	14.9
			HEAT(KW)	62.1	63.1	64.2	65.3	67.0	67.9	69.6	71.5	73.8
			COP(W/W)	2.0	2.2	2.5	2.8	3.1	3.5	3.9	4.4	5.0
	25	77	POWER(KW)	32.2	29.4	26.8	24.5	22.4	20.5	18.8	17.2	15.8
			HEAT(KW)	71.0	72.3	73.6	75.1	76.7	78.7	80.9	83.6	86.6
			COP(W/W)	2.2	2.5	2.7	3.1	3.4	3.8	4.3	4.9	5.5
	30	86	POWER(KW)	33.1	30.4	27.9	25.7	23.6	21.8	20.1	18.5	17.0
			HEAT(KW)	80.9	82.5	84.2	86.1	88.3	90.9	93.9	97.3	101.2
			COP(W/W)	2.4	2.7	3.0	3.4	3.7	4.2	4.7	5.3	5.9
	35	95	POWER(KW)	34.3	31.8	29.4	27.3	25.3	23.5	21.8	20.2	18.7
			HEAT(KW)	91.9	94.0	96.1	98.6	101.4	104.7	108.5	112.8	117.8
			COP(W/W)	2.7	3.0	3.3	3.6	4.0	4.5	5.0	5.6	6.3
	40	104	POWER(KW)	36.0	33.6	31.4	28.6	26.4	25.7	24.1	22.5	21.0
			HEAT(KW)	104.2	106.8	109.5	112.6	118.2	120.4	125.1	130.4	136.4
			COP(W/W)	2.9	3.2	3.5	3.9	4.5	4.7	5.2	5.8	6.5

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 7/15

AR-DA72H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								10.3	9.7
			HEAT(KW)	Low Ambient Temp. Type							19.9	19.1
			COP(W/W)								1.9	2.0
	-25	-13	POWER(KW)	High Hot Water Temp.Type						12.1	11.1	10.4
			HEAT(KW)							23.7	23.1	22.3
			COP(W/W)							2.0	2.1	2.1
	-20	-4	POWER(KW)							13.0	11.9	11.2
			HEAT(KW)							27.4	26.9	26.2
			COP(W/W)							2.1	2.3	2.3
	-15	5	POWER(KW)					17.7	15.6	14.0	12.8	12.0
			HEAT(KW)					31.3	31.7	31.6	31.3	30.7
			COP(W/W)					1.8	2.0	2.3	2.4	2.6
	-10	14	POWER(KW)					18.9	16.8	15.1	13.8	12.9
			HEAT(KW)					36.0	36.5	36.6	36.4	36.0
			COP(W/W)					1.9	2.2	2.4	2.6	2.8
	-5	23	POWER(KW)			25.9	22.8	20.2	18.0	16.3	14.9	13.8
			HEAT(KW)			39.3	40.6	41.5	42.0	42.3	42.3	42.2
			COP(W/W)			1.5	1.8	2.1	2.3	2.6	2.8	3.1
	0	32	POWER(KW)			27.4	24.3	21.6	19.4	17.5	16.0	14.8
			HEAT(KW)			45.5	46.8	47.7	48.4	48.8	49.2	49.5
			COP(W/W)			1.7	1.9	2.2	2.5	2.8	3.1	3.3
	5	41	POWER(KW)			28.9	25.8	23.1	20.8	18.9	17.2	15.9
			HEAT(KW)			53.8	55.0	56.0	56.8	57.6	58.3	59.2
			COP(W/W)			1.9	2.1	2.4	2.7	3.1	3.4	3.7
	10	50	POWER(KW)		37.7	30.1	27.0	24.3	22.0	20.0	18.2	16.7
			HEAT(KW)		65.5	62.9	64.2	65.4	66.5	67.7	69.0	70.5
			COP(W/W)		1.7	2.1	2.4	2.7	3.0	3.4	3.8	4.2
	15	59	POWER(KW)		38.8	31.1	28.1	25.4	23.0	21.0	19.2	17.5
			HEAT(KW)		75.7	73.0	74.5	76.0	77.6	79.4	81.4	83.7
			COP(W/W)		2.0	2.3	2.7	3.0	3.4	3.8	4.2	4.8
	20	68	POWER(KW)	39.2	35.5	32.1	29.2	26.5	24.1	22.0	20.1	18.4
			HEAT(KW)	80.9	82.7	84.4	86.2	88.0	90.4	92.8	95.6	98.9
			COP(W/W)	2.1	2.3	2.6	3.0	3.3	3.7	4.2	4.7	5.4
	25	77	POWER(KW)	40.0	36.5	33.3	30.4	27.8	25.4	23.3	21.4	19.6
			HEAT(KW)	93.1	95.1	97.2	99.6	102.0	104.9	108.2	112.0	116.3
			COP(W/W)	2.3	2.6	2.9	3.3	3.7	4.1	4.6	5.2	5.9
	30	86	POWER(KW)	41.2	37.8	34.7	31.9	29.4	27.0	24.9	23.0	21.1
			HEAT(KW)	106.5	108.9	111.5	114.4	117.7	121.4	125.7	130.5	136.1
			COP(W/W)	2.6	2.9	3.2	3.6	4.0	4.5	5.0	5.7	6.4
	35	95	POWER(KW)	42.7	39.5	36.5	33.9	31.4	29.2	27.1	25.1	23.2
			HEAT(KW)	121.5	124.4	127.6	131.2	135.4	140.1	145.5	151.6	158.5
			COP(W/W)	2.8	3.2	3.5	3.9	4.3	4.8	5.4	6.0	6.8
	40	104	POWER(KW)	44.7	41.7	39.0	36.4	34.1	31.9	29.9	27.9	26.0
			HEAT(KW)	138.2	141.7	145.6	150.2	155.3	161.2	167.8	175.2	183.6
			COP(W/W)	3.1	3.4	3.7	4.1	4.6	5.0	5.6	6.3	7.1

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 8/15

AR-DA96H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								13.4	12.7
			HEAT(KW)	Low Ambient Temp. Type							25.9	24.8
			COP(W/W)								1.9	2.0
	-25	-13	POWER(KW)	High Hot Water Temp.Type						15.7	14.4	13.6
			HEAT(KW)							30.8	30.1	29.1
			COP(W/W)							2.0	2.1	2.1
	-20	-4	POWER(KW)							16.9	15.5	14.6
			HEAT(KW)							35.6	35.0	34.1
			COP(W/W)							2.1	2.3	2.3
	-15	5	POWER(KW)					23.0	20.3	18.2	16.7	15.6
			HEAT(KW)					40.7	41.2	41.1	40.7	39.9
			COP(W/W)					1.8	2.0	2.3	2.4	2.6
	-10	14	POWER(KW)					24.6	21.8	19.6	18.0	16.8
			HEAT(KW)					46.9	47.4	47.5	47.3	46.8
			COP(W/W)					1.9	2.2	2.4	2.6	2.8
	-5	23	POWER(KW)			33.7	29.7	26.3	23.5	21.2	19.3	18.0
			HEAT(KW)			51.0	52.8	53.9	54.6	54.9	55.0	54.9
			COP(W/W)			1.5	1.8	2.1	2.3	2.6	2.8	3.1
	0	32	POWER(KW)			35.6	31.6	28.1	25.2	22.8	20.8	19.3
			HEAT(KW)			59.1	60.8	62.0	62.9	63.5	64.0	64.3
			COP(W/W)			1.7	1.9	2.2	2.5	2.8	3.1	3.3
	5	41	POWER(KW)			37.6	33.6	30.1	27.1	24.5	22.4	20.7
			HEAT(KW)			69.9	71.5	72.8	73.9	74.9	75.9	76.9
			COP(W/W)			1.9	2.1	2.4	2.7	3.1	3.4	3.7
	10	50	POWER(KW)		49.0	39.1	35.1	31.6	28.6	26.0	23.7	21.8
			HEAT(KW)		85.2	81.8	83.4	85.0	86.5	88.0	89.7	91.7
			COP(W/W)		1.7	2.1	2.4	2.7	3.0	3.4	3.8	4.2
	15	59	POWER(KW)		50.4	40.5	36.5	33.0	30.0	27.3	24.9	22.8
			HEAT(KW)		98.5	95.0	96.9	98.8	100.9	103.2	105.8	108.8
			COP(W/W)		2.0	2.3	2.7	3.0	3.4	3.8	4.2	4.8
	20	68	POWER(KW)	50.9	46.1	41.8	37.9	34.5	31.4	28.6	26.2	24.0
			HEAT(KW)	105.2	107.5	109.7	112.1	115.5	117.5	120.7	124.3	128.6
			COP(W/W)	2.1	2.3	2.6	3.0	3.4	3.7	4.2	4.7	5.4
	25	77	POWER(KW)	52.1	47.4	43.2	39.5	36.1	33.1	30.3	27.8	25.5
			HEAT(KW)	121.0	123.6	126.3	129.3	132.6	136.4	140.7	145.6	151.2
			COP(W/W)	2.3	2.6	2.9	3.3	3.7	4.1	4.6	5.2	5.9
	30	86	POWER(KW)	53.5	49.1	45.1	41.5	38.2	35.2	32.4	29.9	27.5
			HEAT(KW)	138.5	141.6	144.9	148.7	153.0	157.9	163.4	169.7	176.9
			COP(W/W)	2.6	2.9	3.2	3.6	4.0	4.5	5.0	5.7	6.4
	35	95	POWER(KW)	55.5	51.3	47.5	44.0	40.8	37.9	35.2	32.6	30.2
			HEAT(KW)	158.0	161.7	165.9	170.6	176.0	182.2	189.2	197.1	206.0
			COP(W/W)	2.8	3.2	3.5	3.9	4.3	4.8	5.4	6.0	6.8
	40	104	POWER(KW)	58.2	54.3	50.7	47.4	44.3	41.5	38.9	36.3	33.8
			HEAT(KW)	179.6	184.2	189.3	195.2	201.9	209.5	218.1	227.8	238.7
			COP(W/W)	3.1	3.4	3.7	4.1	4.6	5.0	5.6	6.3	7.1

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 9/15

AR-DA112H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								16.6	15.7
			HEAT(KW)	Low Ambient Temp. Type							30.6	29.3
			COP(W/W)								1.8	1.9
	-25	-13	POWER(KW)	High Hot Water Temp.Type						19.5	17.9	16.8
			HEAT(KW)							36.5	35.5	34.2
			COP(W/W)							1.9	2.0	2.0
	-20	-4	POWER(KW)							21.0	19.2	18.1
			HEAT(KW)							42.0	41.2	40.0
			COP(W/W)							2.0	2.1	2.2
	-15	5	POWER(KW)					28.5	25.2	22.6	20.7	19.4
			HEAT(KW)					48.5	48.7	48.4	47.7	46.7
			COP(W/W)					1.7	1.9	2.1	2.3	2.4
	-10	14	POWER(KW)					30.5	27.0	24.3	22.3	20.8
			HEAT(KW)					55.6	55.9	55.8	55.3	54.6
			COP(W/W)					1.8	2.1	2.3	2.5	2.6
	-5	23	POWER(KW)			41.8	36.8	32.6	29.1	26.2	24.0	22.3
			HEAT(KW)			61.2	62.8	63.7	64.2	64.3	64.2	63.9
			COP(W/W)			1.5	1.7	2.0	2.2	2.5	2.7	2.9
	0	32	POWER(KW)			44.1	39.1	34.8	31.2	28.2	25.8	23.9
			HEAT(KW)			70.6	72.1	73.0	73.7	74.1	74.4	74.7
			COP(W/W)			1.6	1.8	2.1	2.4	2.6	2.9	3.1
	5	41	POWER(KW)			46.6	41.6	37.3	33.5	30.4	27.8	25.6
			HEAT(KW)			83.2	84.3	85.4	86.3	87.1	88.0	89.0
			COP(W/W)			1.8	2.0	2.3	2.6	2.9	3.2	3.5
	10	50	POWER(KW)		60.7	48.5	43.5	39.2	35.4	32.2	29.4	27.0
			HEAT(KW)		101.5	96.5	98.0	99.3	100.6	102.1	103.8	105.7
			COP(W/W)		1.7	2.0	2.2	2.5	2.8	3.2	3.5	3.9
	15	59	POWER(KW)		62.4	50.1	45.3	40.9	37.1	33.8	30.9	28.3
			HEAT(KW)		116.6	111.6	113.3	115.1	117.1	119.3	122.0	125.2
			COP(W/W)		1.9	2.2	2.5	2.8	3.2	3.5	4.0	4.4
	20	68	POWER(KW)	63.0	57.1	51.8	47.0	42.7	38.9	35.5	32.5	29.7
			HEAT(KW)	124.2	126.3	128.3	130.6	134.0	135.9	139.2	143.0	147.5
			COP(W/W)	2.0	2.2	2.5	2.8	3.1	3.5	3.9	4.4	5.0
	25	77	POWER(KW)	64.4	58.8	53.6	48.9	44.7	41.0	37.5	34.4	31.5
			HEAT(KW)	142.0	144.6	147.2	150.1	153.5	157.4	161.9	167.1	173.2
			COP(W/W)	2.2	2.5	2.7	3.1	3.4	3.8	4.3	4.9	5.5
	30	86	POWER(KW)	66.2	60.8	55.9	51.4	47.3	43.6	40.2	37.0	34.0
			HEAT(KW)	161.7	165.0	168.4	172.2	176.7	181.8	187.7	194.6	202.4
			COP(W/W)	2.4	2.7	3.0	3.4	3.7	4.2	4.7	5.3	5.9
	35	95	POWER(KW)	68.7	63.6	58.8	54.5	50.6	47.0	43.6	40.4	37.4
			HEAT(KW)	183.8	187.9	192.2	197.2	202.9	209.5	217.1	225.7	235.5
			COP(W/W)	2.7	3.0	3.3	3.6	4.0	4.5	5.0	5.6	6.3
	40	104	POWER(KW)	72.0	67.2	62.8	57.2	52.8	51.5	48.2	45.0	41.9
			HEAT(KW)	208.3	213.6	219.0	225.3	236.5	240.7	250.1	260.8	272.7
			COP(W/W)	2.9	3.2	3.5	3.9	4.5	4.7	5.2	5.8	6.5

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 10/15

AR-DA144H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								20.0	19.0
			HEAT(KW)	Low Ambient Temp. Type							38.8	37.2
			COP(W/W)								1.9	2.0
	-25	-13	POWER(KW)	High Hot Water Temp.Type						23.6	21.6	20.4
			HEAT(KW)							46.2	45.1	43.6
			COP(W/W)							2.0	2.1	2.1
	-20	-4	POWER(KW)							25.4	23.2	21.9
			HEAT(KW)							53.4	52.5	51.1
			COP(W/W)							2.1	2.3	2.3
	-15	5	POWER(KW)					34.5	30.5	27.3	25.0	23.4
			HEAT(KW)					61.1	61.8	61.7	61.0	59.9
			COP(W/W)					1.8	2.0	2.3	2.4	2.6
	-10	14	POWER(KW)					36.9	32.7	29.5	26.9	25.1
			HEAT(KW)					70.3	71.1	71.3	70.9	70.2
			COP(W/W)					1.9	2.2	2.4	2.6	2.8
	-5	23	POWER(KW)			50.6	44.5	39.4	35.2	31.7	29.0	27.0
			HEAT(KW)			76.6	79.1	80.9	81.9	82.4	82.5	82.3
			COP(W/W)			1.5	1.8	2.1	2.3	2.6	2.8	3.1
	0	32	POWER(KW)			53.4	47.3	42.2	37.8	34.2	31.2	28.9
			HEAT(KW)			88.7	91.2	93.0	94.3	95.3	95.9	96.5
			COP(W/W)			1.7	1.9	2.2	2.5	2.8	3.1	3.3
	5	41	POWER(KW)			56.4	50.3	45.1	40.6	36.8	33.6	31.0
			HEAT(KW)			104.9	107.2	109.2	110.8	112.3	113.8	115.4
			COP(W/W)			1.9	2.1	2.4	2.7	3.1	3.4	3.7
	10	50	POWER(KW)		73.5	58.7	52.7	47.5	42.9	39.0	35.6	32.7
			HEAT(KW)		127.8	122.7	125.2	127.5	129.7	132.0	134.6	137.5
			COP(W/W)		1.7	2.1	2.4	2.7	3.0	3.4	3.8	4.2
	15	59	POWER(KW)		75.6	60.7	54.8	49.6	45.0	40.9	37.3	34.2
			HEAT(KW)		147.7	142.5	145.3	148.3	151.4	154.8	158.7	163.2
			COP(W/W)		2.0	2.3	2.7	3.0	3.4	3.8	4.2	4.8
	20	68	POWER(KW)	76.4	69.1	62.7	56.9	51.7	47.1	43.0	39.3	36.0
			HEAT(KW)	157.8	161.2	164.6	168.2	173.2	176.2	181.0	186.5	192.9
			COP(W/W)	2.1	2.3	2.6	3.0	3.4	3.7	4.2	4.7	5.4
	25	77	POWER(KW)	78.1	71.1	64.9	59.2	54.2	49.6	45.4	41.7	38.2
			HEAT(KW)	181.5	185.4	189.5	193.9	198.9	204.6	211.0	218.4	226.8
			COP(W/W)	2.3	2.6	2.9	3.3	3.7	4.1	4.6	5.2	5.9
	30	86	POWER(KW)	80.3	73.6	67.6	62.2	57.2	52.7	48.6	44.8	41.2
			HEAT(KW)	207.8	212.4	217.4	223.1	229.5	236.8	245.1	254.6	265.4
			COP(W/W)	2.6	2.9	3.2	3.6	4.0	4.5	5.0	5.7	6.4
	35	95	POWER(KW)	83.2	76.9	71.2	66.0	61.3	56.9	52.8	49.0	45.3
			HEAT(KW)	237.0	242.5	248.8	255.9	264.0	273.2	283.7	295.6	309.0
			COP(W/W)	2.8	3.2	3.5	3.9	4.3	4.8	5.4	6.0	6.8
	40	104	POWER(KW)	87.3	81.4	76.0	71.1	66.5	62.3	58.3	54.5	50.8
			HEAT(KW)	269.5	276.3	284.0	292.8	302.9	314.3	327.2	341.8	358.1
			COP(W/W)	3.1	3.4	3.7	4.1	4.6	5.0	5.6	6.3	7.1

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 11/15

AR-DA168H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								24.9	23.6
			HEAT(KW)	Low Ambient Temp. Type							45.9	43.9
			COP(W/W)								1.8	1.9
	-25	-13	POWER(KW)	High Hot Water Temp.Type						29.2	26.8	25.3
			HEAT(KW)							54.7	53.2	51.3
			COP(W/W)							1.9	2.0	2.0
	-20	-4	POWER(KW)							31.5	28.8	27.1
			HEAT(KW)							63.0	61.7	60.0
			COP(W/W)							2.0	2.1	2.2
	-15	5	POWER(KW)					42.7	37.8	33.9	31.0	29.0
			HEAT(KW)					72.8	73.1	72.6	71.6	70.1
			COP(W/W)					1.7	1.9	2.1	2.3	2.4
	-10	14	POWER(KW)					45.7	40.6	36.5	33.4	31.1
			HEAT(KW)					83.4	83.9	83.7	83.0	82.0
			COP(W/W)					1.8	2.1	2.3	2.5	2.6
	-5	23	POWER(KW)			62.7	55.2	48.9	43.6	39.3	36.0	33.4
			HEAT(KW)			91.8	94.2	95.6	96.3	96.5	96.2	95.8
			COP(W/W)			1.5	1.7	2.0	2.2	2.5	2.7	2.9
	0	32	POWER(KW)			66.2	58.7	52.2	46.8	42.4	38.7	35.8
			HEAT(KW)			106.0	108.1	109.6	110.5	111.2	111.6	112.0
			COP(W/W)			1.6	1.8	2.1	2.4	2.6	2.9	3.1
	5	41	POWER(KW)			69.9	62.4	55.9	50.3	45.6	41.7	38.4
			HEAT(KW)			124.7	126.5	128.1	129.4	130.7	132.0	133.5
			COP(W/W)			1.8	2.0	2.3	2.6	2.9	3.2	3.5
	10	50	POWER(KW)		91.1	72.8	65.3	58.8	53.2	48.3	44.1	40.5
			HEAT(KW)		152.3	144.8	146.9	148.9	150.9	153.1	155.6	158.6
			COP(W/W)		1.7	2.0	2.2	2.5	2.8	3.2	3.5	3.9
	15	59	POWER(KW)		93.7	75.2	67.9	61.4	55.7	50.7	46.3	42.4
			HEAT(KW)		174.9	167.3	169.9	172.6	175.6	179.0	183.0	187.7
			COP(W/W)		1.9	2.2	2.5	2.8	3.2	3.5	4.0	4.4
	20	68	POWER(KW)	94.6	85.7	77.6	70.5	64.1	58.3	53.2	48.7	44.6
			HEAT(KW)	186.3	189.4	192.5	195.8	201.0	203.8	208.8	214.6	221.3
			COP(W/W)	2.0	2.2	2.5	2.8	3.1	3.5	3.9	4.4	5.0
	25	77	POWER(KW)	96.7	88.1	80.4	73.4	67.1	61.4	56.3	51.6	47.3
			HEAT(KW)	213.0	216.8	220.8	225.2	230.2	236.0	242.8	250.7	259.8
			COP(W/W)	2.2	2.5	2.7	3.1	3.4	3.8	4.3	4.9	5.5
	30	86	POWER(KW)	99.4	91.2	83.8	77.1	70.9	65.4	60.2	55.5	51.0
			HEAT(KW)	242.6	247.5	252.6	258.3	265.0	272.7	281.6	291.9	303.6
			COP(W/W)	2.4	2.7	3.0	3.4	3.7	4.2	4.7	5.3	5.9
	35	95	POWER(KW)	103.0	95.4	88.3	81.8	75.9	70.5	65.4	60.7	56.1
			HEAT(KW)	275.6	281.9	288.3	295.8	304.3	314.2	325.6	338.5	353.3
			COP(W/W)	2.7	3.0	3.3	3.6	4.0	4.5	5.0	5.6	6.3
	40	104	POWER(KW)	108.0	100.8	94.2	85.8	79.2	77.2	72.2	67.5	62.9
			HEAT(KW)	312.5	320.4	328.5	337.9	354.7	361.1	375.2	391.1	409.1
			COP(W/W)	2.9	3.2	3.5	3.9	4.5	4.7	5.2	5.8	6.5

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 12/15

AR-DA224H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								33.2	31.4
			HEAT(KW)	Low Ambient Temp. Type							61.2	58.5
			COP(W/W)								1.8	1.9
	-25	-13	POWER(KW)	High Hot Water Temp.Type						39.0	35.7	33.7
			HEAT(KW)							72.9	71.0	68.4
			COP(W/W)							1.9	2.0	2.0
	-20	-4	POWER(KW)							42.0	38.4	36.1
			HEAT(KW)							84.0	82.3	80.0
			COP(W/W)							2.0	2.1	2.2
	-15	5	POWER(KW)					57.0	50.3	45.2	41.4	38.7
			HEAT(KW)					97.0	97.4	96.8	95.4	93.5
			COP(W/W)					1.7	1.9	2.1	2.3	2.4
	-10	14	POWER(KW)					60.9	54.1	48.7	44.5	41.5
			HEAT(KW)					111.2	111.9	111.6	110.7	109.3
			COP(W/W)					1.8	2.1	2.3	2.5	2.6
	-5	23	POWER(KW)			83.6	73.6	65.1	58.1	52.4	47.9	44.5
			HEAT(KW)			122.4	125.6	127.5	128.4	128.6	128.3	127.7
			COP(W/W)			1.5	1.7	2.0	2.2	2.5	2.7	2.9
	0	32	POWER(KW)			88.2	78.2	69.7	62.4	56.5	51.6	47.7
			HEAT(KW)			141.3	144.1	146.1	147.4	148.2	148.8	149.3
			COP(W/W)			1.6	1.8	2.1	2.4	2.6	2.9	3.1
	5	41	POWER(KW)			93.2	83.2	74.5	67.1	60.8	55.6	51.2
			HEAT(KW)			166.3	168.6	170.8	172.5	174.2	176.0	178.0
			COP(W/W)			1.8	2.0	2.3	2.6	2.9	3.2	3.5
	10	50	POWER(KW)		121.5	97.0	87.1	78.4	70.9	64.4	58.8	54.0
			HEAT(KW)		203.1	193.1	195.9	198.6	201.3	204.2	207.5	211.5
			COP(W/W)		1.7	2.0	2.2	2.5	2.8	3.2	3.5	3.9
	15	59	POWER(KW)		124.9	100.3	90.5	81.9	74.3	67.6	61.7	56.5
			HEAT(KW)		233.2	223.1	226.6	230.2	234.1	238.7	244.0	250.3
			COP(W/W)		1.9	2.2	2.5	2.8	3.2	3.5	4.0	4.4
	20	68	POWER(KW)	126.1	114.2	103.5	93.9	85.4	77.8	71.0	64.9	59.4
			HEAT(KW)	248.4	252.5	256.7	261.1	268.0	271.8	278.4	286.1	295.1
			COP(W/W)	2.0	2.2	2.5	2.8	3.1	3.5	3.9	4.4	5.0
	25	77	POWER(KW)	128.9	117.5	107.2	97.8	89.5	81.9	75.1	68.8	63.1
			HEAT(KW)	284.0	289.1	294.3	300.2	306.9	314.7	323.8	334.2	346.4
			COP(W/W)	2.2	2.5	2.7	3.1	3.4	3.8	4.3	4.9	5.5
	30	86	POWER(KW)	132.5	121.7	111.7	102.7	94.6	87.1	80.3	74.0	68.1
			HEAT(KW)	323.5	330.0	336.7	344.4	353.3	363.6	375.5	389.2	404.8
			COP(W/W)	2.4	2.7	3.0	3.4	3.7	4.2	4.7	5.3	5.9
	35	95	POWER(KW)	137.3	127.1	117.7	109.1	101.2	94.0	87.2	80.9	74.8
			HEAT(KW)	367.5	375.9	384.4	394.3	405.8	419.0	434.1	451.4	471.0
			COP(W/W)	2.7	3.0	3.3	3.6	4.0	4.5	5.0	5.6	6.3
	40	104	POWER(KW)	144.0	134.5	125.6	114.4	105.6	102.9	96.3	90.0	83.9
			HEAT(KW)	416.6	427.2	438.0	450.6	473.0	481.5	500.2	521.5	545.5
			COP(W/W)	2.9	3.2	3.5	3.9	4.5	4.7	5.2	5.8	6.5

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 13/15

AR-DA280H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								41.5	39.3
			HEAT(KW)	Low Ambient Temp. Type							76.5	73.2
			COP(W/W)								1.8	1.9
	-25	-13	POWER(KW)	High Hot Water Temp.Type						48.7	44.6	42.1
			HEAT(KW)							91.1	88.7	85.5
			COP(W/W)							1.9	2.0	2.0
	-20	-4	POWER(KW)							52.5	48.1	45.2
			HEAT(KW)							105.0	102.9	100.0
			COP(W/W)							2.0	2.1	2.2
	-15	5	POWER(KW)					71.2	62.9	56.5	51.7	48.4
			HEAT(KW)					121.3	121.8	121.0	119.3	116.9
			COP(W/W)					1.7	1.9	2.1	2.3	2.4
	-10	14	POWER(KW)					76.1	67.6	60.8	55.7	51.9
			HEAT(KW)					139.0	139.8	139.5	138.3	136.6
			COP(W/W)					1.8	2.1	2.3	2.5	2.6
	-5	23	POWER(KW)			104.5	92.0	81.4	72.7	65.5	59.9	55.7
			HEAT(KW)			153.0	157.0	159.3	160.5	160.8	160.4	159.7
			COP(W/W)			1.5	1.7	2.0	2.2	2.5	2.7	2.9
	0	32	POWER(KW)			110.3	97.8	87.1	78.1	70.6	64.5	59.7
			HEAT(KW)			176.6	180.1	182.6	184.2	185.3	186.0	186.6
			COP(W/W)			1.6	1.8	2.1	2.4	2.6	2.9	3.1
	5	41	POWER(KW)			116.4	103.9	93.1	83.9	76.0	69.4	64.0
			HEAT(KW)			207.9	210.8	213.4	215.7	217.8	220.0	222.5
			COP(W/W)			1.8	2.0	2.3	2.6	2.9	3.2	3.5
	10	50	POWER(KW)		151.8	121.3	108.9	98.0	88.6	80.5	73.5	67.5
			HEAT(KW)		253.8	241.4	244.9	248.2	251.6	255.2	259.4	264.4
			COP(W/W)		1.7	2.0	2.2	2.5	2.8	3.2	3.5	3.9
	15	59	POWER(KW)		156.1	125.4	113.1	102.4	92.8	84.5	77.1	70.7
			HEAT(KW)		291.5	278.9	283.2	287.7	292.7	298.4	305.0	312.9
			COP(W/W)		1.9	2.2	2.5	2.8	3.2	3.5	4.0	4.4
	20	68	POWER(KW)	157.6	142.8	129.4	117.4	106.8	97.2	88.7	81.1	74.3
			HEAT(KW)	310.5	315.6	320.8	326.4	335.0	339.7	348.0	357.6	368.9
			COP(W/W)	2.0	2.2	2.5	2.8	3.1	3.5	3.9	4.4	5.0
	25	77	POWER(KW)	161.1	146.9	134.0	122.3	111.8	102.4	93.8	86.1	78.9
			HEAT(KW)	355.0	361.4	367.9	375.3	383.7	393.4	404.7	417.8	433.0
			COP(W/W)	2.2	2.5	2.7	3.1	3.4	3.8	4.3	4.9	5.5
	30	86	POWER(KW)	165.6	152.1	139.7	128.4	118.2	108.9	100.4	92.5	85.1
			HEAT(KW)	404.4	412.6	420.9	430.5	441.6	454.5	469.3	486.5	506.1
			COP(W/W)	2.4	2.7	3.0	3.4	3.7	4.2	4.7	5.3	5.9
	35	95	POWER(KW)	171.7	158.9	147.1	136.4	126.5	117.5	109.1	101.1	93.5
			HEAT(KW)	459.4	469.9	480.6	492.9	507.2	523.7	542.6	564.2	588.8
			COP(W/W)	2.7	3.0	3.3	3.6	4.0	4.5	5.0	5.6	6.3
	40	104	POWER(KW)	180.0	168.1	157.0	143.0	132.0	128.6	120.4	112.5	104.8
			HEAT(KW)	520.8	534.0	547.6	563.2	591.2	601.8	625.3	651.9	681.9
			COP(W/W)	2.9	3.2	3.5	3.9	4.5	4.7	5.2	5.8	6.5

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 14/15

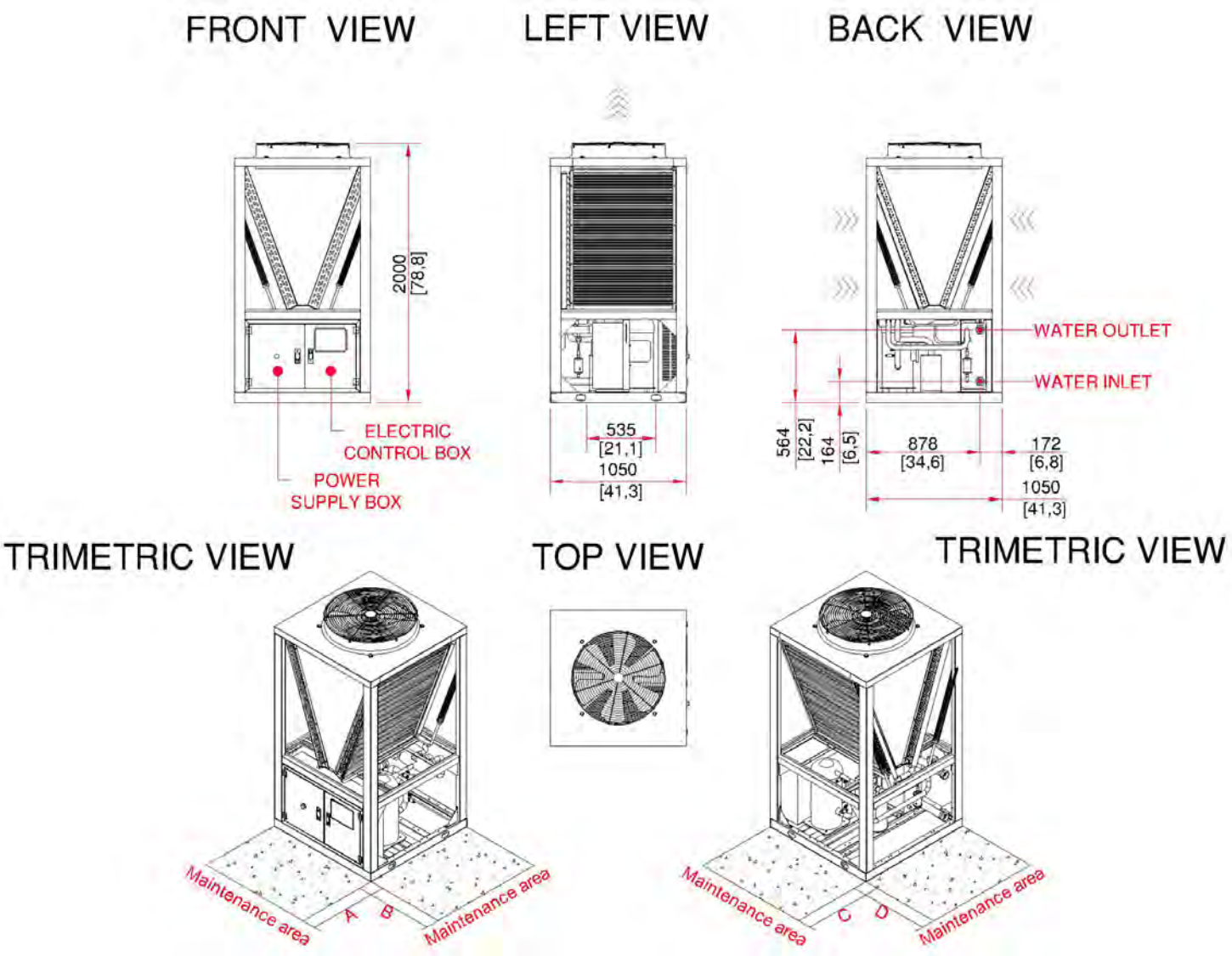
AR-DA336H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								49.8	47.1
			HEAT(KW)	Low Ambient Temp. Type							91.8	87.8
			COP(W/W)								1.8	1.9
	-25	-13	POWER(KW)	High Hot Water Temp.Type						58.4	53.6	50.5
			HEAT(KW)							109.4	106.5	102.7
			COP(W/W)							1.9	2.0	2.0
	-20	-4	POWER(KW)							62.9	57.7	54.2
			HEAT(KW)							126.0	123.5	120.0
			COP(W/W)							2.0	2.1	2.2
	-15	5	POWER(KW)					85.4	75.5	67.8	62.1	58.1
			HEAT(KW)					145.6	146.2	145.2	143.2	140.2
			COP(W/W)					1.7	1.9	2.1	2.3	2.4
	-10	14	POWER(KW)					91.4	81.1	73.0	66.8	62.3
			HEAT(KW)					166.8	167.8	167.4	166.0	163.9
			COP(W/W)					1.8	2.1	2.3	2.5	2.6
	-5	23	POWER(KW)			125.4	110.4	97.7	87.2	78.6	71.9	66.8
			HEAT(KW)			183.6	188.4	191.2	192.6	192.9	192.5	191.6
			COP(W/W)			1.5	1.7	2.0	2.2	2.5	2.7	2.9
	0	32	POWER(KW)			132.3	117.3	104.5	93.7	84.7	77.4	71.6
			HEAT(KW)			211.9	216.2	219.1	221.1	222.3	223.2	224.0
			COP(W/W)			1.6	1.8	2.1	2.4	2.6	2.9	3.1
	5	41	POWER(KW)			139.7	124.7	111.8	100.6	91.2	83.3	76.8
			HEAT(KW)			249.5	253.0	256.1	258.8	261.3	264.0	267.0
			COP(W/W)			1.8	2.0	2.3	2.6	2.9	3.2	3.5
	10	50	POWER(KW)		182.2	145.5	130.6	117.6	106.3	96.5	88.1	80.9
			HEAT(KW)		304.6	289.6	293.9	297.9	301.9	306.3	311.3	317.2
			COP(W/W)		1.7	2.0	2.2	2.5	2.8	3.2	3.5	3.9
	15	59	POWER(KW)		187.3	150.4	135.8	122.8	111.4	101.4	92.6	84.8
			HEAT(KW)		349.8	334.7	339.8	345.3	351.2	358.0	366.0	375.5
			COP(W/W)		1.9	2.2	2.5	2.8	3.2	3.5	4.0	4.4
	20	68	POWER(KW)	189.1	171.4	155.3	140.9	128.1	116.7	106.5	97.4	89.1
			HEAT(KW)	372.6	378.8	385.0	391.7	402.0	407.7	417.5	429.1	442.6
			COP(W/W)	2.0	2.2	2.5	2.8	3.1	3.5	3.9	4.4	5.0
	25	77	POWER(KW)	193.3	176.3	160.7	146.8	134.2	122.9	112.6	103.3	94.6
			HEAT(KW)	426.0	433.7	441.5	450.3	460.4	472.1	485.6	501.4	519.6
			COP(W/W)	2.2	2.5	2.7	3.1	3.4	3.8	4.3	4.9	5.5
	30	86	POWER(KW)	198.7	182.5	167.6	154.1	141.9	130.7	120.5	111.0	102.1
			HEAT(KW)	485.2	495.1	505.1	516.6	530.0	545.4	563.2	583.7	607.3
			COP(W/W)	2.4	2.7	3.0	3.4	3.7	4.2	4.7	5.3	5.9
	35	95	POWER(KW)	206.0	190.7	176.5	163.6	151.8	141.0	130.9	121.3	112.2
			HEAT(KW)	551.3	563.8	576.7	591.5	608.7	628.5	651.2	677.1	706.5
			COP(W/W)	2.7	3.0	3.3	3.6	4.0	4.5	5.0	5.6	6.3
	40	104	POWER(KW)	215.9	201.7	188.4	171.6	158.4	154.4	144.5	135.0	125.8
			HEAT(KW)	624.9	640.8	657.1	675.8	709.5	722.2	750.4	782.3	818.2
			COP(W/W)	2.9	3.2	3.5	3.9	4.5	4.7	5.2	5.8	6.5

Energy Solutions since 1946

VARIABLE WORKING CONDITION DATA 15/15

AR-DA390H/L				LEAVING HOT WATER								
	℃			80	75	70	65	60	55	50	45	40
		℉		176	167	158	149	140	131	122	113	104
AMBIENT TEMP.	-30	-22	POWER(KW)								58.1	55.0
			HEAT(KW)	Low Ambient Temp. Type							107.1	102.5
			COP(W/W)								1.8	1.9
	-25	-13	POWER(KW)	High Hot Water Temp.Type						68.2	62.5	59.0
			HEAT(KW)							127.6	124.2	119.8
			COP(W/W)							1.9	2.0	2.0
	-20	-4	POWER(KW)							73.4	67.3	63.2
			HEAT(KW)							147.0	144.1	140.0
			COP(W/W)							2.0	2.1	2.2
	-15	5	POWER(KW)					99.7	88.1	79.1	72.4	67.8
			HEAT(KW)					169.8	170.5	169.5	167.0	163.6
			COP(W/W)					1.7	1.9	2.1	2.3	2.4
	-10	14	POWER(KW)					106.6	94.7	85.2	77.9	72.7
			HEAT(KW)					194.6	195.7	195.3	193.7	191.3
			COP(W/W)					1.8	2.1	2.3	2.5	2.6
	-5	23	POWER(KW)			146.3	128.8	114.0	101.7	91.8	83.9	77.9
			HEAT(KW)			214.2	219.8	223.1	224.7	225.1	224.6	223.5
			COP(W/W)			1.5	1.7	2.0	2.2	2.5	2.7	2.9
	0	32	POWER(KW)			154.4	136.9	121.9	109.3	98.8	90.3	83.6
			HEAT(KW)			247.3	252.2	255.6	257.9	259.4	260.4	261.3
			COP(W/W)			1.6	1.8	2.1	2.4	2.6	2.9	3.1
	5	41	POWER(KW)			163.0	145.5	130.4	117.4	106.4	97.2	89.6
			HEAT(KW)			291.1	295.1	298.8	301.9	304.9	308.0	311.5
			COP(W/W)			1.8	2.0	2.3	2.6	2.9	3.2	3.5
	10	50	POWER(KW)		212.6	169.8	152.4	137.2	124.0	112.6	102.8	94.4
			HEAT(KW)		355.3	337.9	342.9	347.5	352.2	357.3	363.2	370.1
			COP(W/W)		1.7	2.0	2.2	2.5	2.8	3.2	3.5	3.9
	15	59	POWER(KW)		218.6	175.5	158.4	143.3	130.0	118.3	108.0	98.9
			HEAT(KW)		408.1	390.4	396.5	402.8	409.8	417.7	427.0	438.1
			COP(W/W)		1.9	2.2	2.5	2.8	3.2	3.5	4.0	4.4
	20	68	POWER(KW)	220.7	199.9	181.2	164.4	149.5	136.1	124.2	113.6	104.0
			HEAT(KW)	434.7	441.9	449.2	457.0	469.0	475.6	487.1	500.6	516.4
			COP(W/W)	2.0	2.2	2.5	2.8	3.1	3.5	3.9	4.4	5.0
	25	77	POWER(KW)	225.6	205.7	187.5	171.2	156.6	143.3	131.4	120.5	110.4
			HEAT(KW)	497.0	506.0	515.1	525.4	537.1	550.8	566.6	584.9	606.2
			COP(W/W)	2.2	2.5	2.7	3.1	3.4	3.8	4.3	4.9	5.5
	30	86	POWER(KW)	231.8	212.9	195.5	179.8	165.5	152.5	140.6	129.5	119.1
			HEAT(KW)	566.1	577.6	589.3	602.7	618.3	636.3	657.1	681.0	708.5
			COP(W/W)	2.4	2.7	3.0	3.4	3.7	4.2	4.7	5.3	5.9
	35	95	POWER(KW)	240.3	222.5	206.0	190.9	177.2	164.5	152.7	141.6	130.9
			HEAT(KW)	643.1	657.8	672.8	690.1	710.1	733.2	759.7	789.9	824.3
			COP(W/W)	2.7	3.0	3.3	3.6	4.0	4.5	5.0	5.6	6.3
	40	104	POWER(KW)	251.9	235.3	219.8	200.2	184.8	180.1	168.5	157.5	146.8
			HEAT(KW)	729.1	747.6	766.6	788.5	827.7	842.6	875.4	912.7	954.6
			COP(W/W)	2.9	3.2	3.5	3.9	4.5	4.7	5.2	5.8	6.5

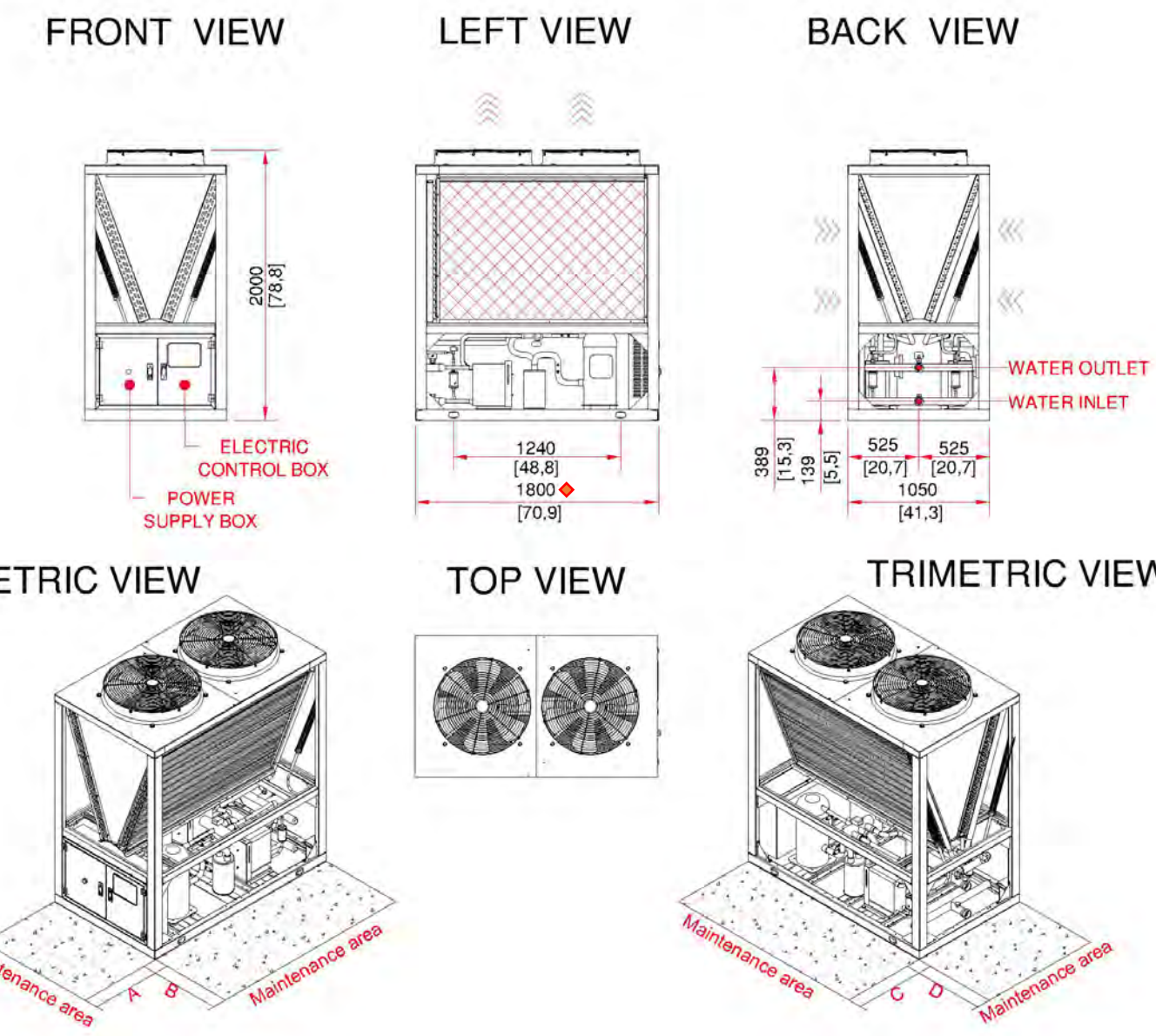
OUTLINE DIMENSION-1 mm(inch)



Maintenance Area Size

Model	Unit (mm)			
	A	B	C	D
AR-DA18H/L	600	800	800	600
AR-DA24H/L	600	800	800	600
AR-DA28H/L	600	800	800	800
AR-DA36H/L	600	800	800	800

OUTLINE DIMENSION-2 mm(inch)

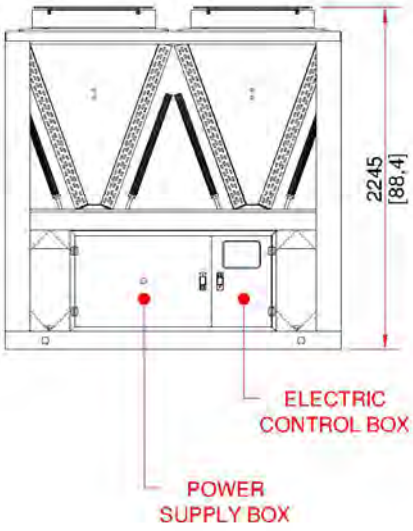


Maintenance Area Size

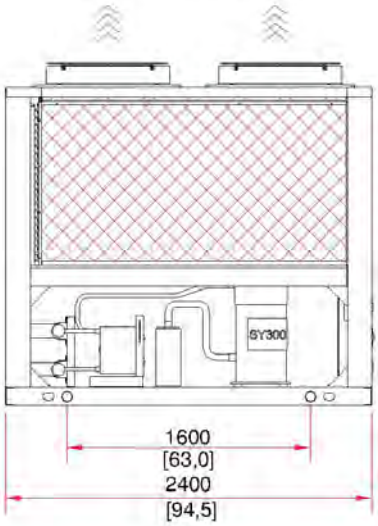
Model	Unit (mm)				
	A	B	C	D	◆
AR-DA48H/L	800	800	800	800	N/A
AR-DA56H/L	800	800	800	800	N/A
AR-DA72H/L	800	1000	1000	800	N/A
AR-DA96H/L	800	1000	1000	800	N/A
AR-DA112H/L	800	1000	1000	1000	+300(11.8)
AR-DA144H/L	800	1000	1000	1000	+300(11.8)

OUTLINE DIMENSION-3 mm(inch)

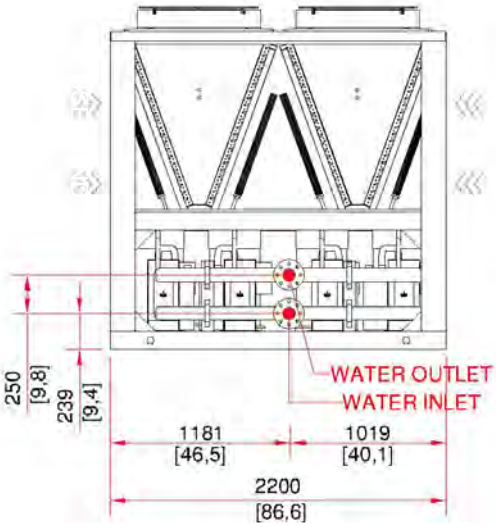
FRONT VIEW



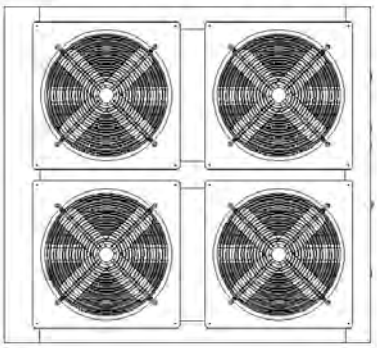
LEFT VIEW



BACK VIEW



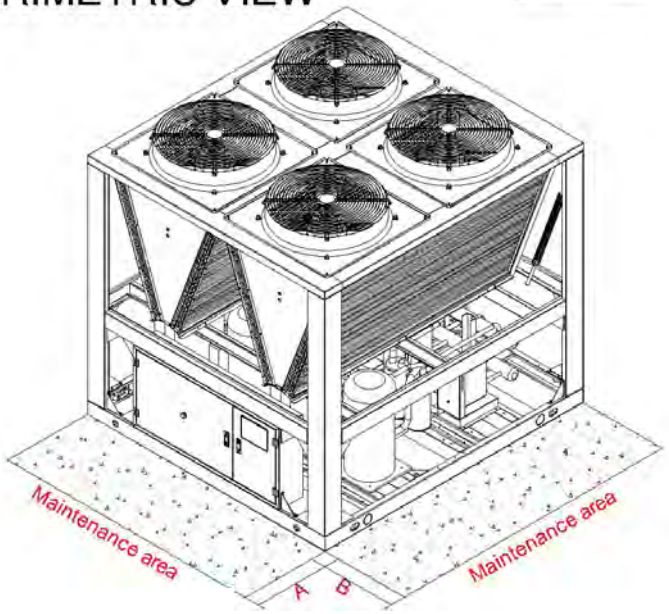
TOP VIEW



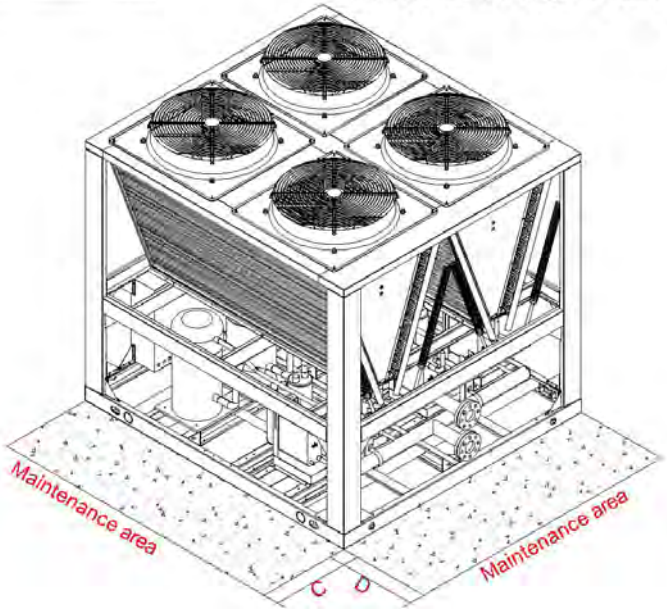
Maintenance Area Size

Model	Unit (mm)			
	A	B	C	D
AR-DA168H/L	800	1000	1000	1000
AR-DA224H/L	1000	1200	1200	1000
AR-DA280H/L	1000	1400	1400	1200

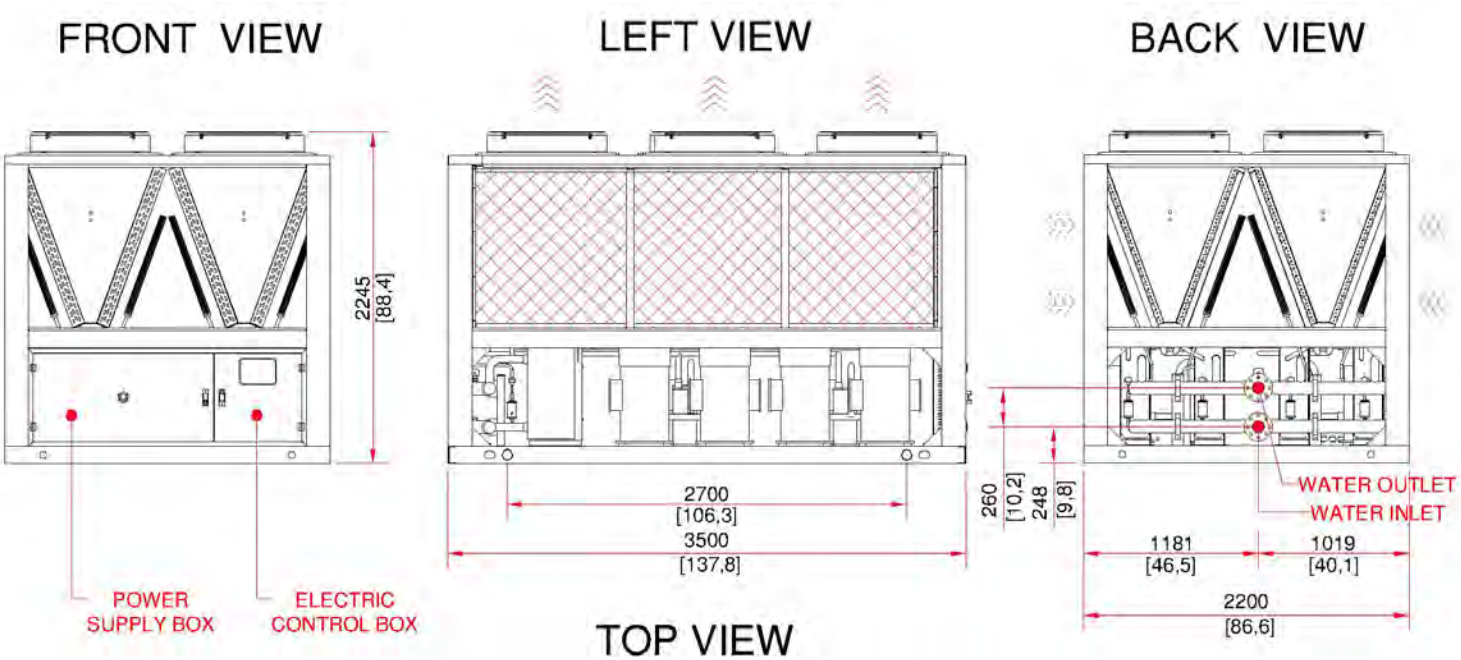
TRIMETRIC VIEW



TRIMETRIC VIEW

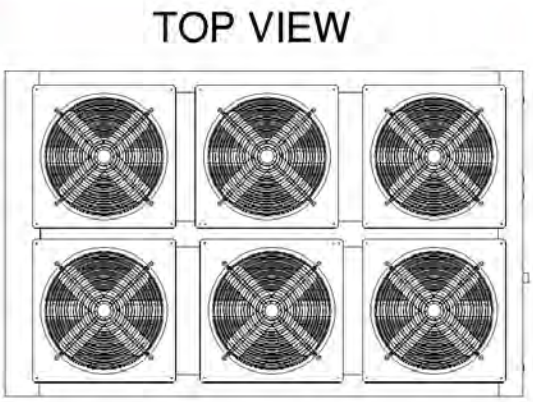


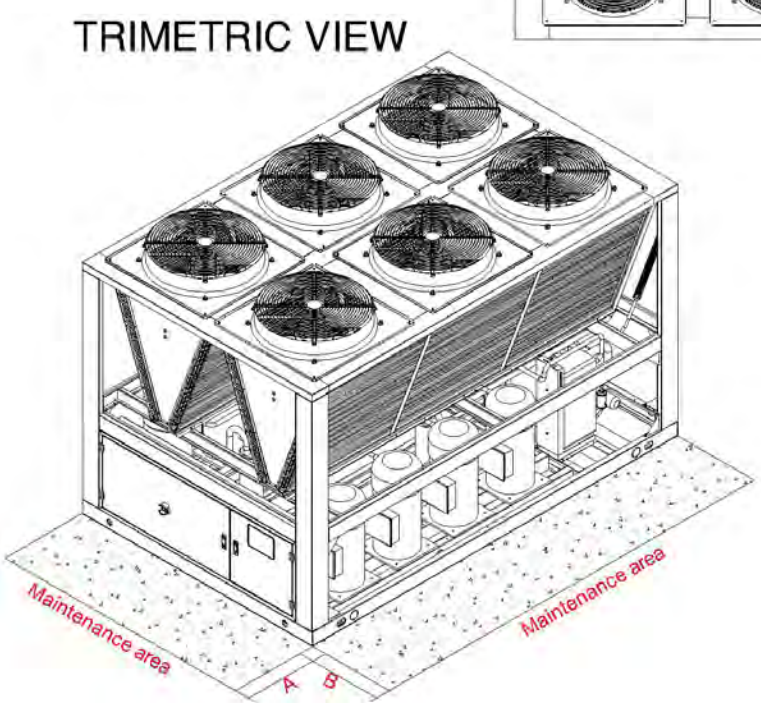
OUTLINE DIMENSION-4 mm(inch)

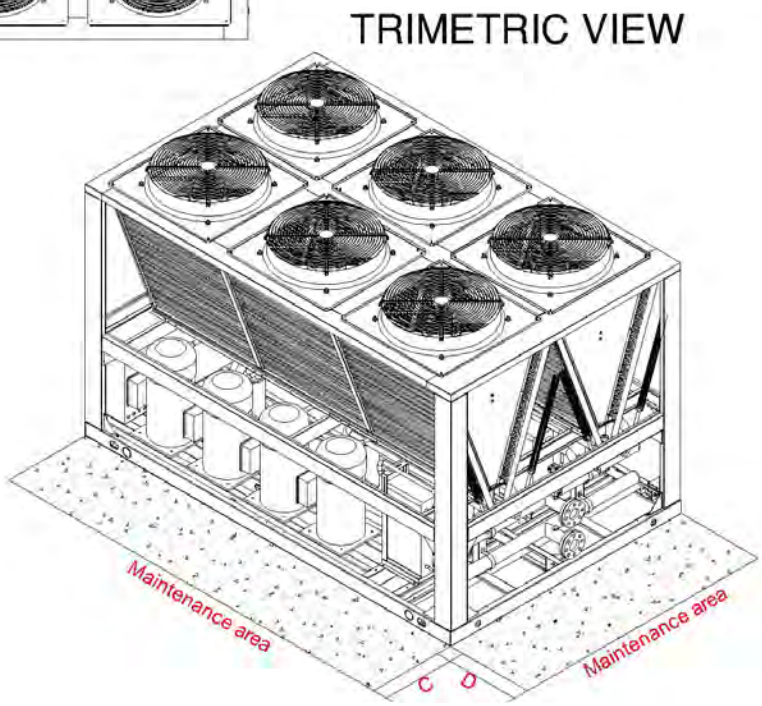


Maintenance Area Size

Model	Unit (mm)			
	A	B	C	D
AR-DA336H/L	1000	1200	1200	1200
AR-DA390H/L	1000	1400	1400	1200





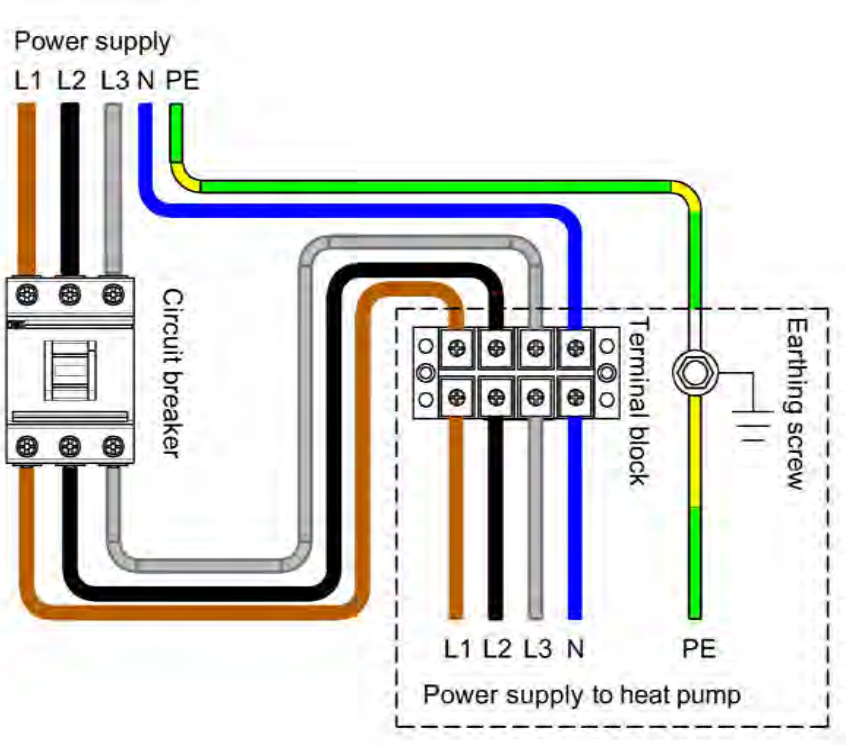


Energy Solutions since 1946

ELECTRICAL INSTALLATION

Wiring schematic diagram

3PH-(380-400)V-50Hz



Wiring Specification Data

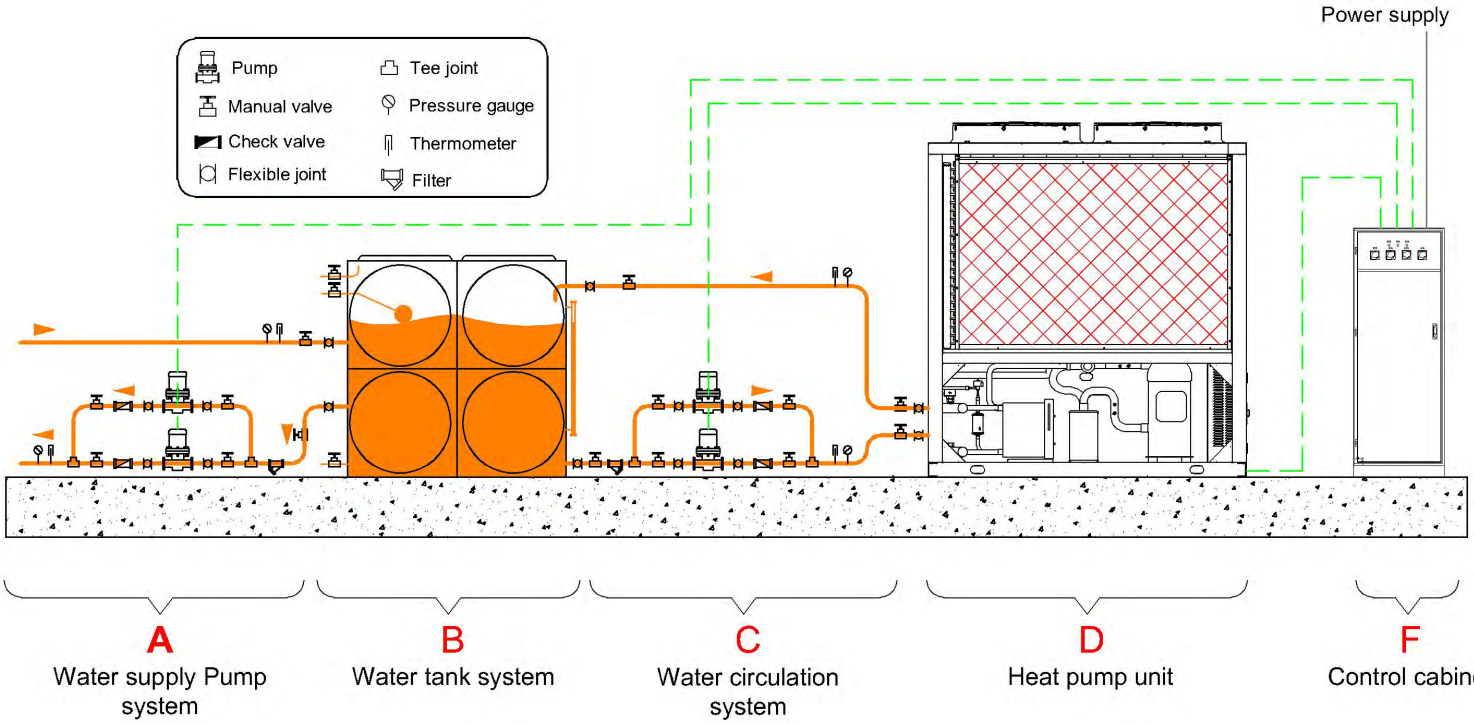
AR-DA (***)	Model	18H	24H	28H	36H	48H	56H	72H	96H	112H	144H	168H	224H	280H	336H	390H
Power line（mm²）	L1/L2/L3	2.5	2.5	4	4	6	10	16	25	35	50	70	120	120	185	240
Null / Earthing line（mm²）	N/PE	1.5	1.5	2.5	2.5	4	6	10	16	16	25	35	70	70	95	120
Circuit breaker	（A）	25	32	32	50	63	63	80	125	160	180	200	315	350	400	500
AR-DA (***)	**Model**	**18L**	**24L**	**28L**	**36L**	**48L**	**56L**	**72L**	**96L**	**112L**	**144L**	**168L**	**224L**	**280L**	**336L**	**390L**
Power line（mm²）	L1/L2/L3	2.5	2.5	2.5	2.5	4	4	6	16	16	25	35	50	70	95	120
Null / Earthing line（mm²）	N/PE	1.5	1.5	1.5	1.5	2.5	2.5	4	10	10	16	16	25	35	50	70
Circuit breaker	（A）	16	20	20	32	40	40	63	80	80	125	125	180	200	250	315

1. The manufacturer can provide a variety of power supply systems, please confirm with the manufacturer before purchasing
2. It is recommended to use the YJV cable, and when the cable length exceeds 50 m, appropriately increase the cable diameter
3. The on-site wiring shall be subject to the accompanying circuit diagram
4. Electrical installation and use must comply with local electrical standards and regulations
5. The unit must be grounded reliably
6. The cable and circuit breakers in the above table are suitable for use area with ambient temperature of 0℃ - 43 ℃ and the elevation ≤2000m,other please consult the manufacturer

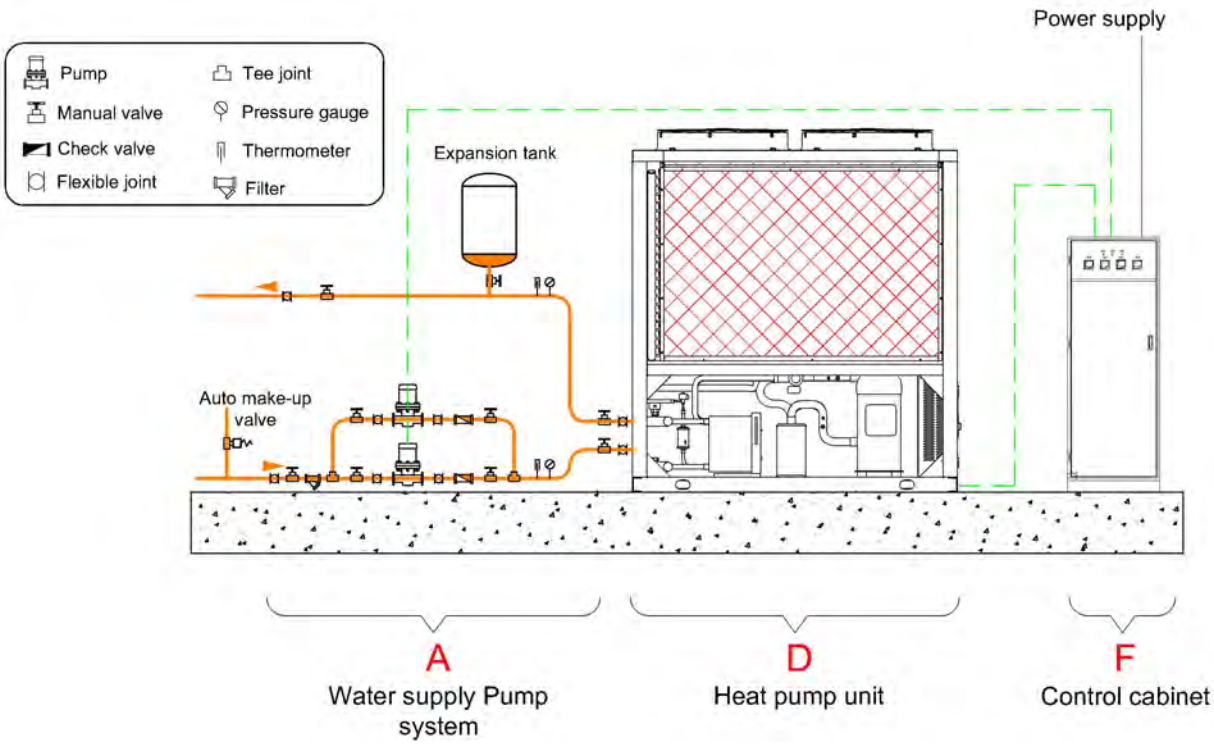
TYPICAL INSTALLATION

Double circuit water supply system
For multiple needs

The manufacturer can provide a complete of engineering accessories for building a heat pump system



Single circuit water supply system
For single needs





Maskinfabrikken ARO A/S - Denmark

HEAT PUMP

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Tel. No.: +4566112878