Carrier

Miraco
MISR REFRIGERATION & AIR CONDITIONING MFG. CO.

Commercial Air Conditioning Solutions

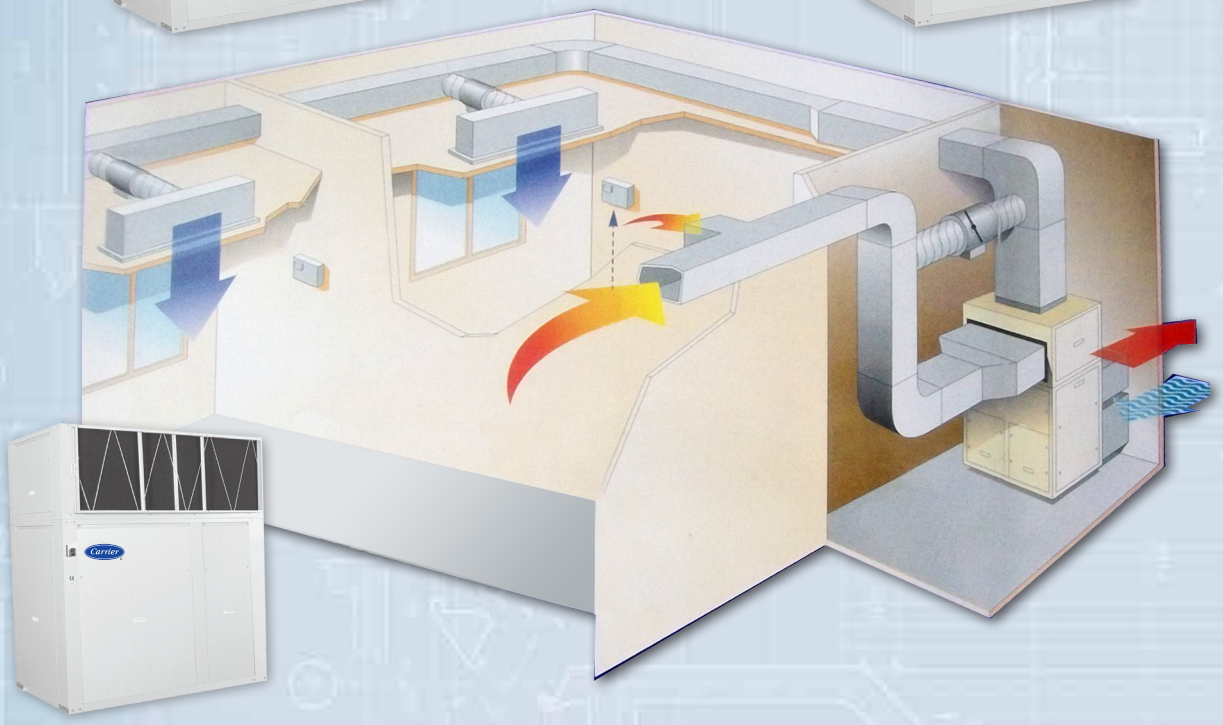
Product Selection Data Manual

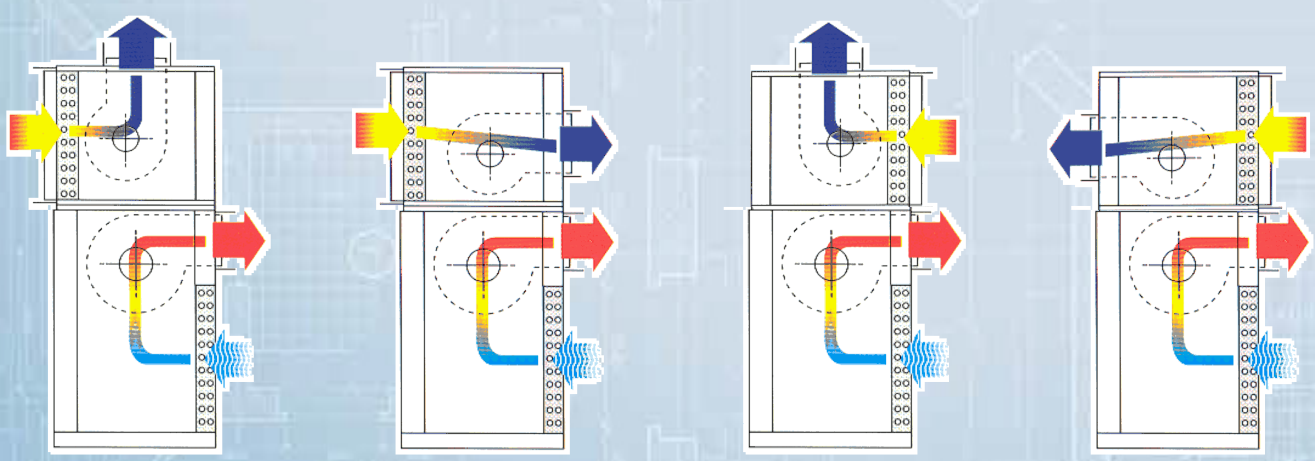
38BB / 40AB Split Systems

50UB Vertical Packaged Systems

R22

Smart Link Control





2021

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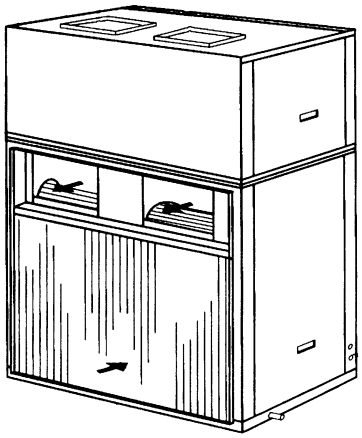
1. MODEL DESIGNATION AND UNIT MODELS

UNIT MODELS | **MODEL DESIGNATION**

VERTICAL PACKAGED SYSTEMS

50UB SERIES



Cool / Heat	Cool Only
50UB 55-E	50UB 55-K
50UB 90-E	50UB 90-K
50UB 110-E	50UB 110-K
50UB 145-E	50UB 145-K
50UB 190-E	50UB 190-K
50UB 250-E	50UB 250-K
50UB 300-E	50UB 300-K

50UB → VERTICAL PACKAGED SYSTEM

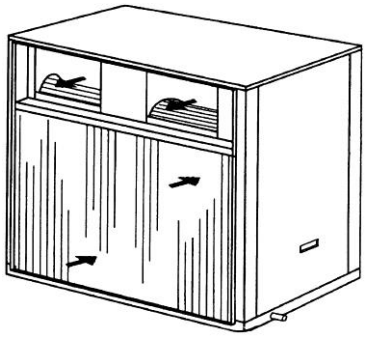
55 → NOMINAL SYSTEM COOLING CAPACITY

55 = 55 kBtu/hr
90 = 90 kBtu/hr
110 = 110 kBtu/hr
145 = 145 kBtu/hr
190 = 190 kBtu/hr
250 = 250 kBtu/hr
300 = 300 kBtu/hr

SPLIT SYSTEMS

CONDENSING UNITS

38BB SERIES



38BB 55
38BB 90
38BB 110
38BB 145
38BB 190
38BB 250
38BB 300

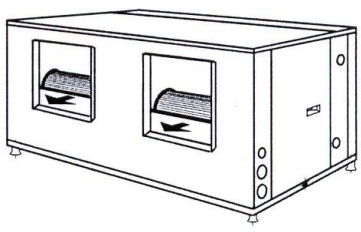
38BB → CONDENSING UNIT

55 → NOMINAL SYSTEM COOLING CAPACITY

55 = 55 kBtu/hr
90 = 90 kBtu/hr
110 = 110 kBtu/hr
145 = 145 kBtu/hr
190 = 190 kBtu/hr
250 = 250 kBtu/hr
300 = 300 kBtu/hr

EVAPORATOR UNITS

40AB SERIES



Cool / Heat	Cool Only
40AB 55-E	40UB 55-K
40AB 90-E	40AB 90-K
40AB 110-E	40AB 110-K
40AB 145-E	40AB 145-K
40AB 190-E	40AB 190-K
40AB 250-E	40AB 250-K
40AB 300-E	40AB 300-K

40AB → EVAPORATOR UNIT

55 → NOMINAL SYSTEM COOLING CAPACITY

55 = 55 kBtu/hr
90 = 90 kBtu/hr
110 = 110 kBtu/hr
145 = 145 kBtu/hr
190 = 190 kBtu/hr
250 = 250 kBtu/hr
300 = 300 kBtu/hr

2. GENERAL GUIDE SPECIFICATIONS

Thank you for your choice of *Carrier vertical packaged / split systems. These fine products have* been carefully designed and manufactured under strict quality conditions to give you full satisfaction through efficient operation with minimum maintenance and service.

Carrier 50UB series were born of a very simple concept :
" An excellent product isn't enough; it must offer more than its competitors ".
In addition to true cooling, *Carrier* 50UB series have advanced features and performance level, which our competitors will find difficult to equal, maintaining the same quality/ price ratio.

TAKE A LOOK AT THESE FEATURES

QUALITY, RELIABILITY AND SAFETY

- All materials included in *Carrier* split or vertical packaged systems conform to the international standards of safety, performance and reliability.
- Quality is ensured through receiving inspection testing and through all stages of manufacturing, sales, installation and servicing to finally ensure customer full satisfaction according to ISO 9001 Quality System.

TRUE POWERFUL COOLING

- Enhanced cooling capacity delivers more comfort than competitors.
  50UB efficient compressors lead to true system cooling Performance.

SPLIT OR VERTICAL PACKAGED

* Carrier split or vertical packaged systems are ideal for installation in new buildings or refurbishment projects in existing buildings. System are designed for small and medium sized air conditioning systems for commercial and residential applications, such as restaurants, shops, laboratories, art galleries, offices and homes.
  The system consist of two sections:
  An evaporator section (40AB) and a condenser section (38BB) of matching size.

HIGH AMBIENT OPERATION

Carrier vertical packaged and split systems are designed to work in high ambient temperatures due to efficient compressors, condenser coils and evaporator coils.

LONG LIFE, CORROSION RESISTANT AND SOLID CONSTRUCTION

* Weather proof made of chemically treated, galvanized steel sheet metal.

* Powder painted with perfect adhesion of a highly resistant polyester paint.

EASY SERVICE AND MAINTENANCE

* The units have access from all sides excellent compressor(s) access and removal if necessary. All access panels have handles.
* The control panel is located in a separate compartment and can be inspected without disturbing unit operation.

GENERAL GUIDE SPECIFICATIONS

COMPACT DESIGN AND LIGHT WEIGHT

Units occupies limited space and has reduced weight, Front indoor air return design enables installation against the wall

LOW INSTALLATION COST

Units are delivered factory wired, charged, and tested. Their installation requires followings connections: Split units are field charged, electrical power supply to thermostat and eventually, to air ducts, and in case of split system, interconnecting refrigerant piping. Condensate water can be removed on each or both sides.

The control box is factory electrically wired. Only the installation of an isolator and fuses and connection to the power supply.

When system is installed as split, the condensing unit refrigerant piping connections are possible at left or right side. The evaporator unit can have refrigerant piping installed on left or right side.

VERSATILITY OF LOCATION AND INSTALLATION

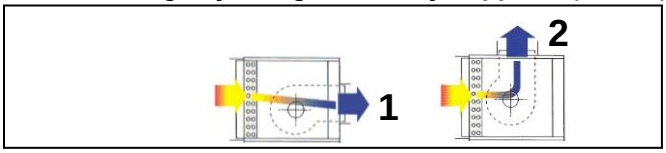
Units can be installed in office building, storage, or stock room or other areas and no machine room is needed. They can be placed close to the outside wall or at remote location because condenser air section can be ducted.
The evaporator unit can be ducted or installed for free blow application with discharge air plenum.
It can be installed in low rise buildings and is also well suited to high rise buildings.
Unit can be installed indoor or outdoor. When applied as a split system, condensing unit can be installed inside or outside of the building with watertight duct connections. It is suitable for outdoor applications.

TYPICAL INSTALLATION (Vertical Packaged system)

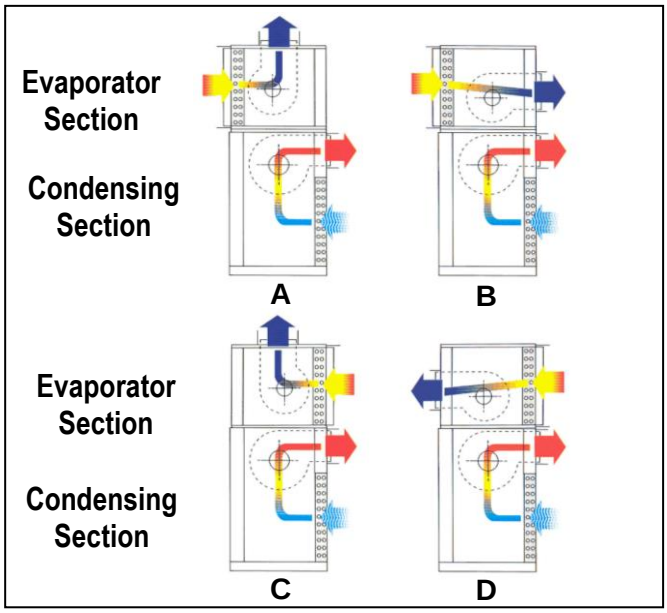
① Two systems installed in interior zone of the motel with ducted evaporator air sections and through the wall outdoor air intake and discharge. (See Fig. 1)
② system installed with discharge plenum and with through the wall outdoor air intake and discharge. (See Fig. 2)
③ system installed in a storage area with ducted indoor air discharge and with through the wall outdoor air intake and discharge. (See Fig. 2)
④ system installed outdoor with ducted evaporator air section.
⑤ system installed in interior zone with ducted condensing and evaporator units. (See Fig. 2)

VERSATILITY OF AIR DELIVERY

- Split system is delivered from the factory with evaporator unit having horizontal air discharge (case 1).
- Evaporator unit can be field converted for vertical air discharge by using accessory supports (case 2).



- Vertical packaged system can be delivered from the factory as per the following arrangements:



Arrangement	Evaporator Air Return	Evaporator Air Supply
A	Horizontal back	Vertical
B	Horizontal back	Horizontal front
C	Horizontal front	Vertical
D	Horizontal front	Horizontal back

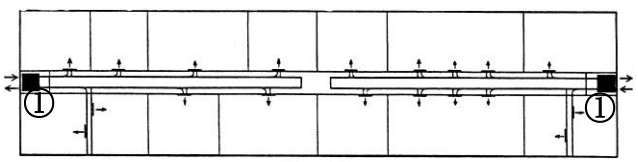
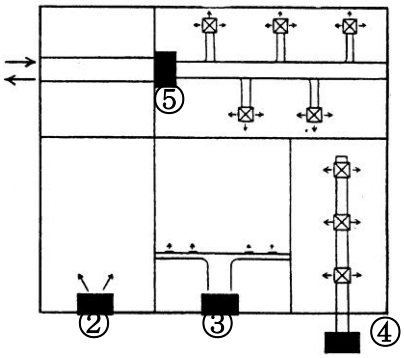
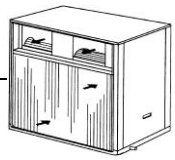


Fig (1)

Fig (2)



3. GUIDE SPECIFICATIONS OF CONDENSING UNIT



REFRIGERANT CIRCUIT

- Condenser coil is manufactured from high quality entirely deoxidized copper tubes with joints brazed by sliver brazing alloys.

- For units sizes 110, 145, 190, 250 and 300. Two independent refrigerant circuits built up of components and materials selected for compatibility, reliability and high efficiency. The two independent circuits design ensures partial load operation.

- Insulated suction line with flexible synthetic rubber insulation, high water diffusion and high sound absorption.

- Filter drier fitted in liquid line, efficiently removes moisture, scale, and solder particles and all types of foreign materials from refrigerant circuit.

- Pumping down valves fitted in liquid line to enable refrigerant to be temporarily stored in the condenser coil if the refrigerant is to be repaired or some part of the refrigeration system to be replaced

- Service valves fitted on the suction and discharge piping for pressure measurements.

- The condensing unit is completely factory assembled, electrically wired, and charged with holding R22 refrigerant charge, tested and quality control approved before leaving the factory.

OPTION

- Crankcase heater to guard compressor against flood back conditions and to eliminate oil foaming on start up.

COMPRESSOR

- Heavy-duty R22 hermetic reciprocating compressor(s) for sizes 55-90-110-145.

- Heavy-duty R22 hermetic scroll compressors for sizes 190-250-300 equipped with oil sight glass.

* Advanced internal discharge muffler.
* Advanced internal spring mounting.
* Multiple cylinder for knock prevention.
* External resilient rubber grommets for vibration isolation.
* Well-designed suction and discharge lines.

CONDENSER MOTOR

* Class F motor windings insulation
* Three phase motor IP55.
* Drives blowers through adjustable pulleys.

CONDENSER COIL

Efficient design:

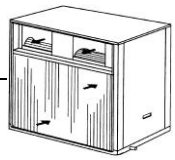
* Optimum condensing surface.
* Inner grooved coil copper tubes
* Modified sine aluminum fins.
* Optimum number of coil circuits.
* Cross counter flow of refrigerant to air path.
* Full condensation with efficient liquid sub cooling.
* Coils are leak tested at 30 bar.

CONDENSER BLOWERS

* Double inlet centrifugal blowers with forward curved blades, driven by three-phase motor with adjustable belt-pulley transmission, adequately dimensioned and easily adjusted.
* Statically and dynamically balanced running in maintenance free bearings.

CONDENSER BLOWERS DRIVE

- Belt drives with fixed pitch blower pulley and adjustable motor pulley
- All condenser blowers are factory set to give 100% nominal static pressure and airflow values and these may be field varied by means of adjustable pulley up to 120% of nominal values.



SUPER SAFETY PROTECTIONS

- High pressure switch for compressor protection against high discharge pressure.
- Low pressure switch for compressor protection against low suction pressure.
- 3 minutes time delay for compressor protection against short cycling when power off or thermostat off.
- Time delay to avoid simultaneous starting of both compressors (for dual compressors – Condensing unit sizes 110 – 145 – 190 – 250 – 300).
- Internal pressure relief valve for compressor protection against high discharge pressures.
- Thermal overload protector for compressor to protect the compressor motor windings against excessive temperature.
- External electronic overloads mounted on the contactors for compressors and motors protection against excessive current.
- Phase protector against phase reversal and phase loss.
- Electrical components (phase seq. / phase loss, contractors, overloads, compressors and motors) are UL and / or CE approved and recognized.

4. GUIDE SPECIFICATIONS OF EVAPORATOR UNIT

REFRIGERANT CIRCUIT

- Evaporator coil is manufactured entirely deoxidized copper tubes with joints brazed by sliver brazing alloys.
- For units sizes 110, 145, 190, 250 and 300, two independent refrigerant circuits built up of components and materials selected for compatibility, reliability and high efficiency. The two independent circuits design ensures partial load operation.
- Self-regulating thermostatic expansion valve with external pressure equalizer in all units to control refrigerant flow to evaporator coil.
- A distributor ensures uniform supply of refrigerant to the evaporator coil.
- The evaporator unit is completely factory assembled, electrically wired, and charged with R22 refrigerant holding charge, tested and quality control approved before leaving the factory.

ELECTRIC HEATER

- Finned aluminum heating elements for efficient and uniform heating.
- Electric heaters include thermal protection, contactors and all appropriate internal wiring.
- The rating of heaters available vary according to unit size.
- Heater frame is constructed from galvanized steel and powder painted with perfect adhesion of a highly resistant polyester paint.

SUPER SAFETY PROTECTIONS

- Temperature limiter protection for electric heater against excessive heating temperatures in case of malfunction of evaporator motor.

EVAPORATOR MOTOR

* Class F motor windings insulation
* Three phase motor IP55.
* Drives blowers through adjustable pulleys.

EVAPORATOR COIL

Efficient design:
* Optimum evaporating surface.
* Inner grooved coil copper tubes.
* Modified sine aluminum fins.
* Optimum number of coil circuits.
* Cross counter flow of refrigerant to air path.
* Full evaporation with vapor superheating.
* Coils are leak tested at 30 bar.

EVAPORATOR BLOWERS

* Double inlet centrifugal blowers with forward curved blades, driven by three-phase motor with adjustable belt-pulley transmission, adequately dimensioned and easily adjusted.
* Statically and dynamically balanced running in maintenance free bearings.

EVAPORATOR BLOWERS DRIVE

- Belt drives with fixed pitch blower pulley and adjustable motor pulley.
- All evaporator blowers are factory set to give 100% nominal static pressure and airflow values and these may be field varied by means of adjustable pulley up to 120% of nominal values.

AIR FILTERS

For unit sizes 55-90-110-145-190-250
- Long life, permanent and cleanable.
- Aluminum filtering media with high dust holding capacity for longer service life and increased overall performance.

For unit size 300
- Polyurethane air filter is used

GUIDE SPECIFICATIONS OF EVAPORATOR UNIT

1.1 Description

LCD Smart link wired controller is a sequential controller suitable to be used for Air cooled split and vertical packaged commercial systems for both cooling only and cooling with electric heaters models

1.2 Application :

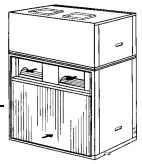
- **Compressor system (Selectable) : 1 – 2 individual circuits (stages)**
- **Electric heater (Selectable) : 2 stages with enable / disable selection.**
- **RS-485 port (For Modbus BMS control)**

1.3 Features

- **Operation Mode Selection Cool – Heat – Fan Only – Dry**
- **Indoor Blower Speed Selection : Single Speed**
- **Key Lock function**
- **Temperature setting 16 ~ 30 °C**
- **Time & Date Setting : Days, AM, PM**
- **Timer ON / OFF**
- **Auto restart function with backup memory.**
  When the power failure is happened during the air conditioner operation, the microprocessor of the printed circuit board will memorize the operation setting. After the power is recovered, the air conditioner operates automatically (after elapse of compressor time delay), according to the previous operation settings.
- **Various Temperature Readings Display**
- **Self Diagnostic Error Code Display**
- **Heater & Compressor Operation Status Display**
- **Sequential control and balance loading (with up to 2 compressors) for sizes 110-145-190-250-300**
- **Display and show compressors operation loading sequence.**
- **Can be connected to Building Management System BMS (Modbus Protocol) through RS-485 connection port (From the main PCB).**

1.4 All control parameters are preset with default value and protected with password to prevent unauthorized access.

5. SYSTEM TECHNICAL DATA

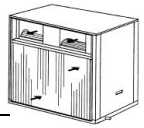


Vertical Packaged System Model			50UB-55	50UB-90	50UB-110	50UB-145	50UB-190	50UB-250	50UB-300
Split System	Condensing Unit Model		38BB-55	38BB-90	38BB-110	38BB-145	38BB-190	38BB-250	38BB-300
	Evaporator Unit Model		40AB-55	40AB -90	40AB-110	40AB-145	40AB-190	40AB-250	40AB-300
Nominal Cooling Capacity*		Btu/hr	54,500	85,700	109,000	144,000	186,000	246,000	298,000
		kW	15.97	25.12	31.95	42.20	54.51	72.10	87.34
Refrigerant Type			R22						
Charge (Split System)		Kg	Holding						
Total Charge (Vertical Packaged System)		Kg	4.3	4.5	2 X 4.3	2 x 5.1	2 x 6.5	2 x 9.5	2 x 11
No. of Refrigerant Circuits			1	1	2	2	2	2	2
Refrigerant Control			Thermostatic Expansion Valve with External Equalizer						
Refrigerant Lines (Split System)									
Suction : Diameter – Qty			7/8"–1	1-1/8"–1	7/8"–2	1-1/8"–2	1-1/8"–2	1-1/8"–2	1-3/8"–2
Liquid: Diameter – Qty			1/2"–1	1/2"–1	1/2"–2	1/2"–2	1/2"–2	5/8"–2	7/8"–2
Drain Line ID			3/4"						
Heating Capacity		kW	9	15	15	18	18	22.5	24

* Cooling Capacity, is based on the following conditions:

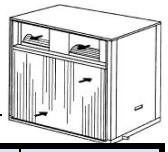
27/19ºC DBT/WBT Return Air to Evaporator Unit, 100% nominal Evap. Air Flow and 35ºC Outdoor Ambient Temperature.

6. TECHNICAL DATA OF CONDENSING UNITS



MODEL		38BB-55	38BB-90	38BB-110	38BB-145	38BB-190	38BB-250	38BB-300
COMPRESSOR								
Power Supply	V/Ph/Hz	380 / 3 / 50						
Type		Recip.	Recip.	Recip.	Recip.	Scroll	Scroll	Scroll
Quantity		1	1	2	2	2	2	2
Compressor Motor Protection		Internal Overload Protection						
Crankcase heater 220V/1PH Quantity x Watts (optional)		1 x 30	1 x 35	2 x 30	2 x 35	2 x 65	2 x 65	2 x 75
Crankcase Heater Type		PTC						
Minimum Volts		360	360	360	360	342	342	342
Maximum Volts		418	418	418	418	418	418	418
Input Power / Compressor	kW	5.27	7.98	5.27	7.08	8.96	11.59	13.62
Input Current / Compressor	A	9.16	14.59	9.16	12.48	16.36	20.43	24.17
Total Rated Input Power	kW	5.27	7.98	10.55	14.16	17.91	23.17	27.24
Total Rated Input Current	A	9.16	14.59	18.32	24.96	32.72	40.86	48.34
Locked Rotor Amperes	(LRA)	64	90	64	80	130	145	175
Maximum Cont. Current MCC (Amps)		15	22	15	18	29	32	35
Displacement	cm^3/rev	107.71	171.26	107.71	135.78	166.60	216.64	249.90
	m^3/hr	18.7	29.80	18.7	23.6	35.0	37.69	43.49
Compressor Speed	RPM	2900	2900	2900	2900	3500	2900	2900
Oil Type		Mineral 160P						
Approved Standards		CE - UL						
CONDENSER MOTOR								
Motor Type		Three Phase Squirrel Cage Motor						
Power Supply	V/Ph/Hz	380 / 3 / 50						
Motor Electrical Connections		Y						Δ
Rated Output Power	kW	1.5	2.2	3	3	3	4	7.5
Rated Input Power	kW	1.94	2.76	3.68	3.68	3.68	4.81	8.46
Rated Input Current	A	3.63	5.05	6.74	6.74	6.74	8.74	15.47
Rated Speed	RPM	1420	1425	1425	1425	1425	1435	1465
Starting / Rated Input Current		5.3	5.1	5.4	5.4	5.4	5.3	6.9
Starting Current	A	19.2	25.7	36.4	36.4	36.4	46.3	106.75
Efficiency @ Rated Power	@100% Pn	77.2 %	79.7 %	81.5 %	81.5 %	81.5 %	83.1 %	88.7 %
	@75% Pn	77.2 %	81.0 %	82.0 %	82.0 %	82.0 %	83.5 %	89.8 %
Efficiency Class		IE1						IE2
Power Factor	@100% Pn	0.81	0.81	0.85	0.85	0.85	0.84	0.83
	@75% Pn	0.76	0.76	0.79	0.79	0.79	0.77	0.78
Rated Torque	NM	10.1	14.7	20.1	20.1	20.1	26.6	49
Sound Level	dB(A)	48	60	60	60	60	58	64
Frame Size		090 L	100 L	100 L	100 L	100 L	112 M	132 M
Type of Construction		IM B3						
Weight	Kg	15.6	18	22	22	22	27	44
Frame Material		Aluminum						
Degree of Protection		IP55						
Method of Cooling, TEFC		IC 411						
Vibration Class		A (Standard)						
Insulation Class		F						
Duty Type		S1 (Continuous Operation)						
Standards and Specifications		IEC, DIN, ISO, VDE, EN						

TECHNICAL DATA OF CONDENSING UNITS



MODEL		38BB-55	38BB-90	38BB-110	38BB-145	38BB-190	38BB-250	38BB-300
CONDENSER BLOWERS								
Quantity		1	2	2	2	2	2	2
Nominal Air Flow	m^3/hr	5,250	9,500	10,000	13,000	13,000	18,000	24,800
Air Flow Range	m^3/hr	5250-6300	9500-11,400	10,000-12,000	13,000-15,600	13,000-15,600	18,000-21,600	24800-29760
Type		Centrifugal – Double Inlet – Forward Curved Blades						
CONDENSER COIL								
Total Face Area	m^2	0.49	0.90	0.90	1.16	1.16	1.84	2.12
Number of Rows-Tube Diam.		5-3/8”	4-3/8”	5-3/8”	5-3/8”	5-3/8”	6-3/8”	6-3/8”
Number of Fins per Inch		14	14	14	14	14	14	14
Type / Material Tubes-Fins		Inner Grooved Copper Tubes – Corrugated Aluminum Fins						
Test Pressure	bar	30						
BLOWER PULLEY								
Type		Fixed Pitch – Cast Iron						
Number of Grooves		1	2	2	2	2	2	2
External Diam./ Shaft Diam. mm		150 / 25	150 / 25	150 / 25	150 / 25	150 / 25	285 / 30	224 / 30
BELT								
Quantity		1	2	2	2	2	2	2
Size		AX39	AX40	AX40	AX70	AX70	AX79	AX71
MOTOR PULLEY								
Type		Adjustable Pitch – Cast Iron						
Number of Grooves		1	2	2	2	2	2	2
External Diam / Shaft Diam. mm		105 / 24	100 / 28	100 / 28	100 / 28	100 / 28	152.4 / 28	138 / 38
UNIT DIMENSIONS & WEIGHT								
UNIT DIMENSIONS (mm)	Width	890	1338	1338	1593	1593	2088	2526
	Height	1069	1165	1165	1405	1405	1405	1408
	Depth	753	766	766	824	824	1060	1080
	Height with Feet	1169	1265	1265	1505	1505	1505	1498
NET WEIGHT	Kg	170	290	320	355	365	635	668
REFRIGERANT PIPING LINES (Split System)								
Suction: Diameter – Qty		7/8” - 1	1-1/8” – 1	7/8” – 2	1-1/8” – 2	1-1/8” – 2	1-1/8” – 2	1-3/8” – 2
Liquid: Diameter – Qty		1/2” - 1	1/2” – 1	1/2” - 2	1/2” - 2	1/2” - 2	5/8” - 2	7/8” - 2

7. TECHNICAL DATA OF EVAPORATOR UNITS

MODEL		40AB-55	40AB –90	40AB-110	40AB-145	40AB-190	40AB-250	40AB-300
EVAPORATOR MOTOR								
Motor Type		Three Phase Squirrel Cage Motor						
Power Supply	V/Ph/Hz	380 / 3 / 50						
Motor Electrical Connections		Y						Δ
Rated Output Power	kW	0.75	1.1	1.5	2.2	2.2	4	7.5
Rated Input Power	kW	1.04	1.47	1.94	2.76	2.76	4.81	8.46
Rated Input Current	A	1.98	2.73	3.63	5.05	5.05	8.74	15.47
Rated Speed	RPM	1395	1415	1420	1425	1425	1435	1465
Starting / Rated Input Current		4.2	4.6	5.3	5.1	5.1	5.3	6.9
Starting Current	A	8.4	12.6	19.2	25.8	25.8	46.3	106.75
Efficiency @ Rated Power	@100% Pn	72.1 %	75.0 %	77.2 %	79.7 %	79.7 %	83.1 %	88.7 %
	@75% Pn	72.1 %	75.0 %	77.2 %	81.0 %	81.0 %	83.5 %	89.8 %
Efficiency Class		IE1						IE2
Power Factor	@100% Pn	0.80	0.81	0.81	0.81	0.81	0.84	0.83
	@75% Pn	0.75	0.76	0.76	0.76	0.76	0.77	0.78
Rated Torque	NM	5.1	7.4	10.1	14.7	14.7	26.6	49
Sound Level	dB(A)	47	48	48	60	60	58	64
Frame Size		080 M	090 S	090 L	100 L	100 L	112 M	132 M
Weight	Kg	10	13	15.6	18	18	27	44
Frame Material		Aluminum						
Degree of Protection		IP55						
Method of Cooling, TEFC		IC 411						
Vibration Class		A (Standard)						
Insulation Class		F						
Duty Type		S1 (Continuous Operation)						
Standards and Specifications		IEC, DIN, ISO, VDE, EN						
EVAPORATOR BLOWER								
Quantity		1	2	2	2	2	2	2
Nominal Air Flow	m^3/hr	3400	5100	6000	10,200	10,200	12,000	16,100
Air Flow Range	m^3/hr	3400-4080	5100-6120	6000-7200	10200-12240	10200-12240	12000-14400	16100-17800
Type		Centrifugal – Double Inlet - Forward Curved Blades						
EVAPORATOR COIL								
Total Face Area	m^2	0.30	0.64	0.70	0.77	0.77	1.10	1.34
Number of Rows-Tube Diam.		4-3/8”	4-3/8”	5-3/8”	4-3/8”	4-3/8”	5-3/8”	6-3/8”
Number of Fins per Inch		14	14	14	14	12	14	14
Type / Material Tubes-Fins		Inner Grooved Copper Tubes – Corrugated Aluminum Fins						
Test Pressure	bar	30						
REFRIGERANT								
Type		R22						
EXPANSION DEVICE								
Type		Thermostatic Expansion Valve with External Equalizer						
Quantity		1	1	2	2	2	2	2
BLOWER PULLEY								
Type - Material		Fixed Pitch – Cast Iron						
Number of Grooves		1	1	1	2	2	2	2
External Diam./Shaft Diam. mm		125 / 20	125 / 20	125 / 20	125 / 25	125 / 25	159 / 25	140 / 25

TECHNICAL DATA OF EVAPORATOR UNITS

MODEL		40AB-55	40AB –90	40AB-110	40AB-145	40AB-190	40AB-250	40AB-300
MOTOR PULLEY								
Type		Adjustable Pitch – Cast Iron						
Number of Grooves		1	1	1	2	2	2	2
External Diam / Shaft Diam. mm		100 / 19	105 / 24	105 / 24	100 / 28	100 / 28	152.4 / 28	138 / 38
BELT								
Quantity		1	1	1	2	2	2	2
Size		AX37	AX38	AX38	AX42	AX42	AX32	AX41
ELECTRIC HEATER								
Total kW		9	15	15	18	18	22.5	24
Number of Heating Elements		6	6	6	6	6	9	12
kW Per Heating Element		1.5	2.5	2.5	3	3	2.5	2
Number of Stages		2	2	2	2	2	2	2
AIR FILTER								
Filtering Media		Aluminum Mesh						Polyurethane
UNIT DIMENSIONS & WEIGHT								
UNIT DIMENSIONS (mm)	Width	890	1338	1338	1593	1593	2088	2665
	Height	536	663	663	792	792	654	750
	Depth	753	766	766	824	824	1060	1154
	Depth W/Heater	922.5	939.5	939.5	997	997	1234.5	1328.5
NET WEIGHT								
Cool Only	Kg	85	125	140	205	205	310	365
Cool / Heat	Kg	100	140	155	225	225	335	385
REFRIGERANT PIPING LINES (Split System)								
Suction: Diameter – Qty		7/8" - 1	1-1/8" – 1	7/8" – 2	1-1/8" – 2	1-1/8" – 2	1-1/8" – 2	1-3/8" – 2
Liquid: Diameter – Qty		1/2" - 1	1/2" – 1	1/2" - 2	1/2" - 2	1/2" - 2	5/8" – 2	7/8" – 2

8. ELECTRICAL DATA

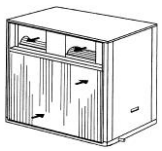
System Model	Vertical Packaged	50UB-55	50UB-90	50UB-110	50UB-145	50UB-190	50UB-250	50UB-300
	Split	38BB-55 + 40AB-55	38BB-90 + 40AB-90	38BB-110 + 40AB-110	38BB-145 + 40AB-145	38BB-190 + 40AB-190	38BB-250 + 40AB-250	38BB-300 + 40AB-300
NOMINAL POWER SUPPLY V/Ph/Hz		380 / 3 / 50						
Minimum Volts – Maximum Volts		360 – 418				342 – 418		
Cooling Consumption	kW (1)	8.3	12.2	16.2	20.6	24.4	32.8	44.2
	Amps (1)	14.8	22.4	28.7	36.8	44.5	58.3	79.3
Heating Consumption	kW	10.04	16.47	16.94	20.76	20.76	27.31	32.46
	Amps	15.66	25.53	26.43	32.41	32.41	42.94	51.95
Starting Current	Amps	91.6	128.3	119.6	142.2	192.2	237.6	388.5
Mains Fuse Rating (2)	Amps	25	40	50	80	80	100	125
Mains Power Switch (2)	Amps	25	40	50	80	80	100	125
Wiring Section (3)	mm²	6	10	16	35	35	35	35
COMPRESSOR								
Power Supply V/Ph/Hz		380 / 3 / 50						
Minimum Volts - Maximum Volts		360 – 418				342 – 418		
Number of Compressors		1	1	2	2	2	2	2
Rated Input Power / Compressor kW		5.27	7.98	5.27	7.08	8.96	11.59	13.62
Rated Input Current / Compressor (A)		9.16	14.59	9.16	12.48	16.36	20.43	24.17
Total Rated Input Power kW		5.27	7.98	10.55	14.16	17.91	23.17	27.24
Total Rated Input Current (A)		9.16	14.59	18.32	24.96	32.72	40.86	48.34
Locked Rotor Amperes / Comp. (LRA)		64	90	64	80	130	145	175
Maximum Continuous Current (Amps)		15	22	15	18	29	32	35
CONDENSER MOTOR								
Power Supply V/Ph/Hz		380 / 3 / 50						
Minimum Volts - Maximum Volts		342 – 418						
Motor Electrical Connections		Y						Δ
Rated Output Power kW		1.5	2.2	3	3	3	4	7.5
Rated Input Power kW		1.94	2.76	3.68	3.68	3.68	4.81	8.46
Rated Input Current A		3.63	5.05	6.74	6.74	6.74	8.74	15.47
Starting / Rated Input Current		5.3	5.1	5.4	5.4	5.4	5.3	6.9
Starting Current A		19.2	25.7	36.4	36.4	36.4	46.3	106.75
EVAPORATOR MOTOR								
Power Supply V/Ph/Hz		380 / 3 / 50						
Minimum Volts - Maximum Volts		342 – 418						
Motor Electrical Connections		Y						Δ
Rated Output Power kW		0.75	1.1	1.5	2.2	2.2	4	7.5
Rated Input Power kW		1.04	1.47	1.94	2.76	2.76	4.81	8.46
Rated Input Current A		1.98	2.73	3.63	5.05	5.05	8.74	15.47
Starting / Rated Input Current		4.2	4.6	5.3	5.1	5.1	5.3	6.9
Starting Current A		8.4	12.6	19.2	25.8	25.8	46.3	106.75
ELECTRIC HEATER								
Power Supply V/Ph/Hz		380 / 3 / 50						
Total Power kW		9	15	15	18	18	22.5	24
Number of Heating Elements		6	6	6	6	6	9	12
kW Per Heating Element		1.5	2.5	2.5	3	3	2.5	2
Number of Stages		2	2	2	2	2	2	2
Full Load Amperes A		13.68	22.80	22.80	27.36	27.36	34.20	36.50

(1) Outdoor air temperature 35ºC db, Indoor air temperature 27/19 ºC db/wb.

(2) Mains fuses and mains power switch are field installed.
The installer should place 3 (Three) Fuses and 1 (One) mains isolator of capacities as shown in the table.

(3) The specified wiring section refers to copper conductors a 3-core cable having a maximum length of 20 meter.
For lengths exceeding 20 meter, resize wires accordingly.

9. AIR FLOW PERFORMANCE DATA



Condenser Fan Performance Data

If other static pressure and airflow combinations are required to balance ductwork, select condenser blower speed in accordance with Fan Performance Table. All units are factory set to give 100% nominal flow and static pressure values and these may be varied by means of the adjustable motor pulley up to 120% of the nominal air flow.

AVAILABLE EXTERNAL STATIC PRESSURE CONDENSING UNIT

Unit Size	Motor HP	Air Flow			External Static Pressure			
					0.2 in.wg		0.3 in.wg	
					50 Pa		75 Pa	
		%	cfm	m³/h	RPM	kW	RPM	kW
55	2	100	3092	5,250	915	0.92	953	0.96
		110	3401	5,775	985	1.14	1013	1.21
		120	3711	6,300	1.02	1.41	1053	1.46
90	3	100	5596	9,500	930	1.55	963	1.69
		110	6155	10,450	985	1.98	1013	2.10
		120	6715	11,400	1045	2.51	1073	2.62
110	4	100	5890	10,000	940	1.75	975	1.86
		110	6479	11,000	1010	2.24	1045	2.36
		120	7068	12,000	1070	2.75	1093	2.87
145 190	4	100	7657	13,000	860	2.18	885	2.29
		110	8423	14,300	920	2.8	945	2.90
		120	9188	15,600	985	3.8	1000	3.95
250	5.5	100	10602	18,000	720	3.65	740	3.75
		110	11662	19,800	760	4.1	778	4.30
		120	12722	21,600	795	5.1	813	5.45
300	10	100	14607	24800	799	6.02	822	6.19
		110	16068	27280	844	6.77	863	7.10
		120	17529	29760	882	8.42	902	9.00

Motor of greater HP required 1 HP = 0.746 kW 1 m³/hr = 0.589 cfm

Available static pressure includes condenser coil casing pressure drop

AIR FLOW PERFORMANCE DATA

Evaporator Fan Performance Data

If other static pressure and airflow combinations are required to balance ductwork, select evaporator blower speed in accordance with Fan Performance Table. All units are factory set to give 100% nominal flow and static pressure values and these may be varied by means of the adjustable motor pulley up to 120% of the nominal.

AVAILABLE EXTERNAL STATIC PRESSURE EVAPORATOR UNIT

Unit Size	Motor HP	Airflow			External Static Pressure							
					0.2 in.wg		0.4 in.wg		0.6 in.wg		0.8 in.wg	
					50 Pa		100 Pa		150 Pa		200 Pa	
		%	cfm	m³/h	RPM	kW	RPM	kW	RPM	kW	RPM	kW
55	1	100	2003	3,400	990	0.48	1060	0.51				
		110	2203	3,740	1040	0.56	1105	0.63				
		120	2403	4,080	1105	0.74	1180	0.83				
90	1.5	100	3004	5,100	890	0.51	985	0.63				
		110	3304	5,610	940	0.68	1030	0.77				
		120	3605	6,120	990	0.80	1075	0.93				
110	2	100	3534	6,000	1010	0.81	1090	0.93				
		110	3887	6,600	1060	1.00	1130	1.10				
		120	4241	7,200	1110	1.22	1190	1.34				
145 190	3	100	6008	10,200	920	1.58	990	1.78	1050	1.90		
		110	6609	11,220	995	1.94	1050	2.05	1110	2.25		
		120	7209	12,240	1075	2.4	1120	3.00	1180	3.35		
250	5.5	100	7068	12,000	1070	3.27	1120	3.56	1180	3.88	1203	3.95
		110	7775	13,200	1160	4.10	1210	4.42	1260	4.71	1280	4.89
		120	8482	14,400	1260	5.29	1315	5.75	1345	6.03	1373	6.18
300	10	100	9483	16100	1188	5.40	1243	5.87	1310	6.40	1335	6.52
		110	9984	16950	1288	6.77	1343	7.29	1398	7.77	1421	8.06
		120	10484	17800	1398	8.73	1460	9.49	1493	9.95	1524	10.19

Motor of greater HP required **1 HP = 0.746 kW** **1 m³/hr = 0.589 cfm**

Available static pressure includes evaporator coil casing pressure drop

10. COOLING CAPACITIES

UNIT SIZE: 55

EVAP. ENTERING AIR TEMPERATURE °C		EVAPORATOR AIR FLOW cfm	2003					
		CONDENSER ENTERING AIR TEMPERATURE °C	25	30	35	40	43	46
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	53555	50555	46965	43825	41715	39600
		TOTAL INPUT POWER kW	6.80	7.27	7.75	8.23	8.50	8.78
15°C	18°C	SENSIBLE CAPACITY Btu/hr	30335	28765	27160	25590	23680	21770
	19°C		33100	31530	29925	28355	26445	24535
	20°C		35895	34295	32725	31120	29210	27300
	21°C		38660	36510	35485	33920	32005	30095
	22°C		41460	39855	38285	36680	34805	32930
	23°C		44220	42650	41050	39515	37570	35690
	24°C		46985	45415	43815	42245	39615	36990
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	56895	54340	50750	46995	44985	42975
		TOTAL INPUT POWER kW	7.03	7.51	8.00	8.49	8.77	9.06
17°C	20°C	SENSIBLE CAPACITY Btu/hr	30540	28935	27365	25765	23885	22010
	21°C		33305	31735	30130	28560	26650	24740
	22°C		36100	34500	32930	31395	29415	27435
	23°C		38900	37295	35690	34120	32210	30300
	24°C		41630	40060	38455	36885	34975	33065
	25°C		44425	42825	41255	39650	37740	35830
	26°C		47190	45620	44015	42450	40535	38625
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	60270	57680	54500	50780	48520	46250
		TOTAL INPUT POWER kW	7.26	7.75	8.30	8.75	9.04	9.34
19°C	22°C	SENSIBLE CAPACITY Btu/hr	30745	29140	27570	25970	24055	22145
	23°C		33510	31770	30370	28730	26855	24980
	24°C		36340	34705	33100	31495	29620	27740
	25°C		39070	37465	35865	34260	32380	30505
	26°C		41835	40265	38625	37025	35145	33270
	27°C		44630	43030	41390	39785	37910	36035
	28°C		47395	45825	44155	42585	40675	38765
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	63285	60480	57505	53750	51685	49620
		TOTAL INPUT POWER kW	7.49	7.99	8.50	9.01	9.31	9.62
21°C	24°C	SENSIBLE CAPACITY Btu/hr	30915	29345	27740	26175	24260	22350
	25°C		33715	32110	30505	28935	26820	24705
	26°C		36510	34905	33270	31700	29585	27470
	27°C		39275	37670	36035	34465	32350	30235
	28°C		42040	40470	38795	37260	35215	33165
	29°C		44800	43235	41560	39990	38150	36305
	30°C		47600	45415	44325	42755	40945	39140

NOTES:

1. 1 kW = 860 Kcal/H = 3412 BTU/H = 0.284 Ref. Tons.
2. Nominal total cooling capacity and total input power are respectively 54500 Btu/hr and 8.30 kW (at nominal evaporator air flow and at nominal conditions: 27°C DBT & 19°C WBT indoor air and 35°C DBT outdoor air).
3. When evaporator air flow is different from nominal air flow, use following multipliers:

MULTIPLIER FOR	Air flow	Multi	Air flow	Multi	Air flow	Multi
Total Capacity	2003	1.00	2203	1.02	2403	1.04
Total Input power		1.00		1.02		1.04
Sensible Capacity		1.00		1.04		1.06

COOLING CAPACITIES

UNIT SIZE: 90

EVAP. ENTERING AIR TEMPERATURE °C		EVAPORATOR AIR FLOW cfm	3004					
		CONDENSER ENTERING AIR TEMPERATURE °C	25	30	35	40	43	46
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	87250	80520	74240	67770	63880	59985
		TOTAL INPUT POWER kW	10.09	10.78	11.47	12.16	12.58	13.00
15°C	18°C	SENSIBLE CAPACITY Btu/hr	53775	49885	45995	42105	37430	32760
	19°C		58380	54490	50600	46715	42040	37365
	20°C		62990	59100	55210	51320	46645	41970
	21°C		67595	63705	59815	55925	51250	46575
	22°C		72200	68310	64420	60530	55855	51180
	23°C		76805	72915	69025	65140	60465	55790
	24°C		81415	77525	73635	69745	65070	60395
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	92335	86145	79970	73810	70105	66395
		TOTAL INPUT POWER kW	10.42	11.13	11.84	12.55	12.98	13.41
17°C	20°C	SENSIBLE CAPACITY Btu/hr	53400	49510	45620	41730	37055	32380
	21°C		58005	54115	50225	46335	41665	36990
	22°C		62615	58725	54835	50945	46270	41595
	23°C		67220	63330	59440	55550	50875	46200
	24°C		71825	67935	64045	60155	55480	50805
	25°C		76430	72540	68650	64760	60090	55415
	26°C		81035	77150	73260	69370	64695	60020
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	97450	91570	85700	79850	76330	72810
		TOTAL INPUT POWER kW	10.75	11.48	12.20	12.94	13.38	13.82
19°C	22°C	SENSIBLE CAPACITY Btu/hr	53025	49135	45245	41355	36680	32005
	23°C		57630	53740	49850	45960	41290	36615
	24°C		62235	58350	54460	50570	45895	41220
	25°C		66845	62955	59065	55175	50500	45825
	26°C		71450	67560	63670	59780	55105	50430
	27°C		76055	72165	68275	64385	59710	55040
	28°C		80660	76770	72885	68995	64320	59645
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	102570	96995	91440	85890	82560	79225
		TOTAL INPUT POWER kW	11.08	11.83	12.58	13.33	13.78	14.23
21°C	24°C	SENSIBLE CAPACITY Btu/hr	52650	48760	44870	40980	36305	31630
	25°C		57255	53365	49475	45585	40910	36240
	26°C		61860	57970	54085	50195	45520	40845
	27°C		66470	62580	58690	54800	50125	45450
	28°C		71075	67185	63295	59405	54730	50055
	29°C		75680	71790	67900	64010	59335	54665
	30°C		80285	76395	72505	68620	63945	59270

NOTES:

1. 1 kW = 860 Kcal/H = 3412 BTU/H = 0.284 Ref. Tons.
2. Nominal total cooling capacity and total input power are respectively 85700 Btu/hr and 12.20 kW (at nominal evaporator air flow and at nominal conditions: 27°C DBT & 19°C WBT indoor air and 35°C DBT outdoor air).
3. When evaporator air flow is different from nominal air flow, use following multipliers:

MULTIPLIER FOR	Air flow	Multi	Air flow	Multi	Air flow	Multi
Total Capacity	3004	1.00	3304	1.04	3605	1.06
Total Input power		1.00		1.02		1.03
Sensible Capacity		1.00		1.08		1.10

COOLING CAPACITIES

UNIT SIZE: 110

EVAP. ENTERING AIR TEMPERATURE °C		EVAPORATOR AIR FLOW cfm	3534					
		CONDENSER ENTERING AIR TEMPERATURE ° C	25	30	35	40	43	46
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	107035	101100	93930	87625	83340	79050
		TOTAL INPUT POWER kW	13.35	14.29	15.18	16.09	16.66	17.20
15ºC	18ºC	SENSIBLE CAPACITY Btu/hr	60700	57530	54355	51180	47360	43540
	19ºC		66230	63055	59885	56710	52925	49135
	20ºC		71790	68620	65445	62270	58450	54630
	21ºC		77355	74180	71005	67835	64010	60190
	22ºC		82915	79740	76570	73395	69575	66980
	23ºC		88475	85300	82095	78920	75135	71345
	24ºC		94005	90830	87655	84485	79265	94515
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	113785	108635	101465	93965	89920	85870
		TOTAL INPUT POWER kW	13.78	14.74	15.64	16.61	17.19	17.75
17ºC	20ºC	SENSIBLE CAPACITY Btu/hr	61075	57905	54730	51560	47770	43985
	21ºC		66640	63465	60295	57120	53300	114235
	22ºC		72200	69025	65855	62680	58860	55040
	23ºC		77760	74590	71415	68240	64420	60600
	24ºC		83290	80115	76945	73770	69985	66195
	25ºC		88850	85680	82505	79330	75510	71690
	26ºC		94415	91240	88065	84895	81070	77250
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	120500	115350	109000	101500	96980	92450
		TOTAL INPUT POWER kW	14.21	15.19	16.20	17.13	17.72	18.30
19ºC	22ºC	SENSIBLE CAPACITY Btu/hr	61485	58315	55140	51965	48145	44325
	23ºC		67050	63875	60700	57495	53705	49920
	24ºC		72575	69405	66195	63020	59235	55445
	25ºC		78135	74965	71755	68550	64760	60975
	26ºC		83700	80525	77250	74075	70290	66500
	27ºC		89260	86085	84075	79265	75815	72370
	28ºC		94820	91650	88305	85130	81345	77555
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	123265	120910	114970	107470	102945	98420
		TOTAL INPUT POWER kW	14.64	15.64	16.65	17.65	18.25	18.85
21ºC	24ºC	SENSIBLE CAPACITY Btu/hr	61860	58690	55515	52345	48555	44770
	25ºC		67425	64250	61045	57870	53640	49410
	26ºC		72985	69810	66570	63395	59165	54935
	27ºC		78545	75375	72100	68925	64730	60530
	28ºC		84110	80935	77625	74450	70290	72680
	29ºC		89635	86465	83155	79980	76330	72680
	30ºC		95195	90830	88680	85505	81890	78275

NOTES:

1. 1 kW = 860 Kcal/H = 3412 BTU/H = 0.284 Ref. Tons.
2. Nominal total cooling capacity and total input power are respectively 109000 Btu/hr and 16.20 kW (at nominal evaporator air flow and at nominal conditions: 27°C DBT & 19°C WBT indoor air and 35°C DBT outdoor air) .
3. When evaporator air flow is different from nominal air flow, use following multipliers:

MULTIPLIER FOR	Air flow	Multi	Air flow	Multi	Air flow	Multi
Total Capacity	3534	1.00	3887	1.01	4241	1.02
Total Input power		1.00		1.01		1.03
Sensible Capacity		1.00		1.02		1.13

COOLING CAPACITIES

UNIT SIZE: 145

EVAP. ENTERING AIR TEMPERATURE °C		EVAPORATOR AIR FLOW cfm	6008					
		CONDENSER ENTERING AIR TEMPERATURE ° C	25	30	35	40	43	46
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	144790	138030	129665	120915	115665	110415
		TOTAL INPUT POWER kW	17.14	18.30	19.46	20.62	21.30	21.98
15°C	18°C	SENSIBLE CAPACITY Btu/hr	82505	79125	75750	72335	68345	64355
	19°C		90420	87045	83665	80320	76260	72200
	20°C		98335	94960	91580	88235	84175	80115
	21°C		106250	102875	99495	96155	92090	88030
	22°C		114170	110790	107410	104070	100010	97485
	23°C		122085	118705	115330	111985	107925	103865
	24°C		130000	126620	123245	119900	115840	111780
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	150740	144390	136850	128100	122850	117600
		TOTAL INPUT POWER kW	17.68	18.88	20.08	21.28	21.99	22.70
17°C	20°C	SENSIBLE CAPACITY Btu/hr	82025	78650	75270	71895	67835	63775
	21°C		89945	86565	83185	79810	75750	68275
	22°C		97860	94480	91105	87725	83665	79605
	23°C		105775	102395	99020	95640	91580	87520
	24°C		113690	110310	106935	103555	99495	95435
	25°C		121605	118230	114850	111475	107410	103350
	26°C		129520	126145	122765	119390	115330	111270
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	155940	150750	144000	135250	130000	124750
		TOTAL INPUT POWER kW	18.22	19.46	20.60	21.94	22.68	23.42
19°C	22°C	SENSIBLE CAPACITY Btu/hr	81515	78135	74760	71415	67355	63295
	23°C		89430	86055	82675	79330	75270	71210
	24°C		97345	93970	90590	87245	83185	79125
	25°C		105265	101885	98505	95165	91105	87045
	26°C		113180	109800	106425	103080	99020	94960
	27°C		121095	117715	114340	110995	106935	102875
	28°C		129010	125630	88135	118910	114850	110790
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	161895	157935	151150	142400	137155	131905
		TOTAL INPUT POWER kW	18.76	20.04	21.32	22.60	23.37	24.14
21°C	24°C	SENSIBLE CAPACITY Btu/hr	81035	77660	74280	70905	66880	62850
	25°C		88955	85575	82200	78820	74795	70765
	26°C		96870	93490	90115	86735	82710	78685
	27°C		104785	101405	98030	94650	90625	86600
	28°C		112700	109325	105945	102565	98540	94515
	29°C		120615	117240	113860	110485	106455	102770
	30°C		128535	125155	121775	118400	114375	110345

NOTES:

1. 1 kW = 860 Kcal/H = 3412 BTU/H = 0.284 Ref. Tons.
2. Nominal total cooling capacity and total input power are respectively 144000 Btu/hr and 20.60 kW (at nominal evaporator air flow and at nominal conditions: 27°C DBT & 19°C WBT indoor air and 35°C DBT outdoor air) .
3. When evaporator air flow is different from nominal air flow, use following multipliers:

MULTIPLIER FOR	Air flow	Multi	Air flow	Multi	Air flow	Multi
Total Capacity	6008	1.00	6609	1.03	7209	1.05
Total Input power		1.00		1.02		1.04
Sensible Capacity		1.00		1.05		1.09

COOLING CAPACITIES

UNIT SIZE: 190

EVAP. ENTERING AIR TEMPERATURE °C		EVAPORATOR AIR FLOW cfm	6008					
		CONDENSER ENTERING AIR TEMPERATURE ° C	25	30	35	40	43	46
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	198855	183860	170195	157250	150600	143950
		TOTAL INPUT POWER kW	20.14	21.52	22.90	24.28	25.12	25.96
15°C	18°C	SENSIBLE CAPACITY Btu/hr	116865	108025	99190	90350	79775	68515
	19°C		125460	116625	107820	98985	88030	77795
	20°C		134095	125255	116420	107585	104445	86430
	21°C		142690	133855	125020	116180	105605	95025
	22°C		151325	142490	133650	124815	114235	103660
	23°C		159925	151085	142250	133410	122835	112255
	24°C		168555	159720	150880	142045	131465	120890
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	205310	190760	177985	166045	158895	151745
		TOTAL INPUT POWER kW	20.79	22.21	23.63	25.05	25.91	26.77
17°C	20°C	SENSIBLE CAPACITY Btu/hr	116350	107515	98680	89840	79265	68685
	21°C		124950	116115	107275	98440	87860	77285
	22°C		133580	124745	115910	107070	96495	85915
	23°C		142180	133345	124505	115670	105090	94515
	24°C		150780	141975	132390	124300	113725	101305
	25°C		159410	150575	141735	132900	122325	111745
	26°C		168010	159170	150335	141500	130920	120345
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	210950	197660	186000	173800	166650	159500
		TOTAL INPUT POWER kW	21.44	22.90	24.40	25.82	26.70	27.58
19°C	22°C	SENSIBLE CAPACITY Btu/hr	115840	107005	98165	89330	78750	68175
	23°C		124440	115600	106765	97925	87350	76770
	24°C		133035	124300	115395	106560	95950	85370
	25°C		141670	132830	123995	115155	104580	94005
	26°C		150265	141430	132595	123755	113180	102600
	27°C		158900	150060	141225	132390	121810	111235
	28°C		167500	158660	149825	140985	130410	119830
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	217410	205455	193500	181560	174410	167260
		TOTAL INPUT POWER kW	22.09	23.59	25.09	26.59	27.49	28.39
21°C	24°C	SENSIBLE CAPACITY Btu/hr	115295	106455	97620	88785	78205	67630
	25°C		123925	115090	106250	97415	86840	76260
	26°C		132525	123685	114850	106015	95435	84860
	27°C		141155	132320	123485	114645	104070	93490
	28°C		149755	140920	132080	123245	112665	102090
	29°C		158355	149515	140715	131875	121265	110690
	30°C		166985	158150	149310	140475	129895	119320

NOTES:

1. 1 kW = 860 Kcal/H = 3412 BTU/H = 0.284 Ref. Tons.
2. Nominal total cooling capacity and total input power are respectively 186000 Btu/hr and 24.36 kW (at nominal evaporator air flow and at nominal conditions: 27°C DBT & 19°C WBT indoor air and 35°C DBT outdoor air).
3. When evaporator air flow is different from nominal air flow, use following multipliers:

MULTIPLIER FOR	Air flow	Multi	Air flow	Multi	Air flow	Multi
Total Capacity	6008	1.00	6609	1.03	7209	1.05
Total Input power		1.00		1.02		1.04
Sensible Capacity		1.00		1.05		1.09

COOLING CAPACITIES

UNIT SIZE: 250

EVAP. ENTERING AIR TEMPERATURE °C		EVAPORATOR AIR FLOW cfm	7068					
		CONDENSER ENTERING AIR TEMPERATURE ° C	25	30	35	40	43	46
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	259675	245230	230820	216410	207800	199190
		TOTAL INPUT POWER kW	27.15	29.00	30.85	32.70	33.80	34.90
15ºC	18ºC	SENSIBLE CAPACITY Btu/hr	107345	100315	93285	86225	77935	69675
	19ºC		124575	117545	110620	103590	95300	87010
	20ºC		141910	131260	127850	120855	112530	104205
	21ºC		159170	152180	145215	138190	129895	121605
	22ºC		176505	169475	162380	155455	147130	138805
	23ºC		193735	186740	179815	172750	164495	156270
	24ºC		211105	204075	197080	190155	181830	173505
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	265255	251650	237205	222830	212360	201890
		TOTAL INPUT POWER kW	28.01	29.92	31.83	33.74	34.88	36.02
17ºC	20ºC	SENSIBLE CAPACITY Btu/hr	107550	100485	93455	86530	78205	69880
	21ºC		124780	117855	110790	103760	95470	87180
	22ºC		142080	135085	128090	121130	112805	104480
	23ºC		159375	152415	145390	138360	130035	121710
	24ºC		176710	169680	162755	155725	147400	139075
	25ºC		194045	187015	179985	172955	164665	156375
	26ºC		211310	204280	197320	190290	182000	173705
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	269050	258000	246000	229180	220570	211960
		TOTAL INPUT POWER kW	28.87	30.84	32.80	34.78	35.96	37.14
19ºC	22ºC	SENSIBLE CAPACITY Btu/hr	107720	100690	93730	86700	78375	70050
	23ºC		125050	117990	110995	104070	95745	87420
	24ºC		142315	135390	128330	121300	113010	104715
	25ºC		159615	152620	145560	138630	130340	122050
	26ºC		176880	169955	162890	155895	147570	139245
	27ºC		194215	187220	180155	173230	164905	156580
	28ºC		211445	204520	197525	190460	182170	173880
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	272920	264390	249980	235460	226850	218240
		TOTAL INPUT POWER kW	29.73	31.76	33.79	36.82	37.04	38.26
21ºC	24ºC	SENSIBLE CAPACITY Btu/hr	107990	100590	93900	86905	78580	70255
	25ºC		125225	118230	111235	96935	95915	87590
	26ºC		142590	135525	128500	121470	113180	104885
	27ºC		159820	152790	145865	138805	130510	122220
	28ºC		177155	170125	163095	156065	147740	139415
	29ºC		194830	187460	180430	173435	165110	156785
	30ºC		211750	204755	197695	190665	182375	174085

NOTES:

1. 1 kW = 860 Kcal/H = 3412 BTU/H = 0.284 Ref. Tons.
2. Nominal total cooling capacity and total input power are respectively 246000 Btu/hr and 32.80 kW (at nominal evaporator air flow and at nominal conditions: 27°C DBT & 19°C WBT indoor air and 35°C DBT outdoor air).
3. When evaporator air flow is different from nominal air flow, use following multipliers:

MULTIPLIER FOR	Air flow	Multi	Air flow	Multi	Air flow	Multi
Total Capacity	7068	1.00	7775	1.02	8482	1.04
Total Input power		1.00		1.02		1.03
Sensible Capacity		1.00		1.04		1.09

COOLING CAPACITIES

UNIT SIZE: 300

EVAP. ENTERING AIR TEMPERATURE °C		EVAPORATOR AIR FLOW cfm	9483					
		CONDENSER ENTERING AIR TEMPERATURE ° C	25	30	35	40	43	46
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	314595	297135	279610	262185	251760	241330
		TOTAL INPUT POWER kW	36.96	39.48	42.00	44.52	46.03	47.54
15ºC	18ºC	SENSIBLE CAPACITY Btu/hr	129895	121365	112870	104340	94310	84315
	19ºC		150745	142215	133855	125360	115330	105295
	20ºC		171695	158830	154705	146240	136175	126075
	21ºC		192610	184150	175720	167225	157160	147130
	22ºC		213560	205065	196465	188105	178040	167940
	23ºC		234405	225945	217585	209020	199025	189095
	24ºC		255425	246930	238465	230075	220010	209945
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	321355	304910	287345	269960	257280	244600
		TOTAL INPUT POWER kW	38.14	40.74	43.34	45.94	47.50	49.06
17ºC	20ºC	SENSIBLE CAPACITY Btu/hr	130135	121570	113075	104715	94615	84550
	21ºC		150985	142590	134060	125565	115535	105500
	22ºC		171900	163435	154975	146580	136480	126415
	23ºC		192850	184420	175925	167430	157330	147265
	24ºC		213835	205305	196945	188415	178350	168280
	25ºC		234780	226285	217790	209260	199230	189200
	26ºC		255700	247170	238740	230245	220215	210180
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	325950	312600	298000	277650	267300	256800
		TOTAL INPUT POWER kW	39.32	42.00	44.20	47.36	48.97	50.58
19ºC	22ºC	SENSIBLE CAPACITY Btu/hr	130340	121845	113415	104920	94820	84755
	23ºC		151325	142760	134300	125940	115840	105775
	24ºC		172205	163815	155285	146785	136755	126690
	25ºC		193120	184660	176130	167735	157705	147675
	26ºC		214035	205645	197115	188620	178550	168485
	27ºC		234985	226525	217995	209600	199535	189470
	28ºC		255835	247475	239015	230450	220420	210385
WET BULB	DRY BULB	TOTAL CAPACITY Btu/hr	330640	320345	302825	285260	274835	264410
		TOTAL INPUT POWER kW	40.50	43.26	46.02	48.78	50.44	52.10
21ºC	24ºC	SENSIBLE CAPACITY Btu/hr	130680	121710	113620	105160	95095	84995
	25ºC		151530	143070	134605	117305	116045	105980
	26ºC		172545	163985	155485	146990	136960	126930
	27ºC		193395	184865	176505	167940	157910	147880
	28ºC		214345	205850	197355	188855	178755	168690
	29ºC		235740	226830	218300	209840	199775	189710
	30ºC		256210	247750	239220	230690	220655	210625

NOTES:

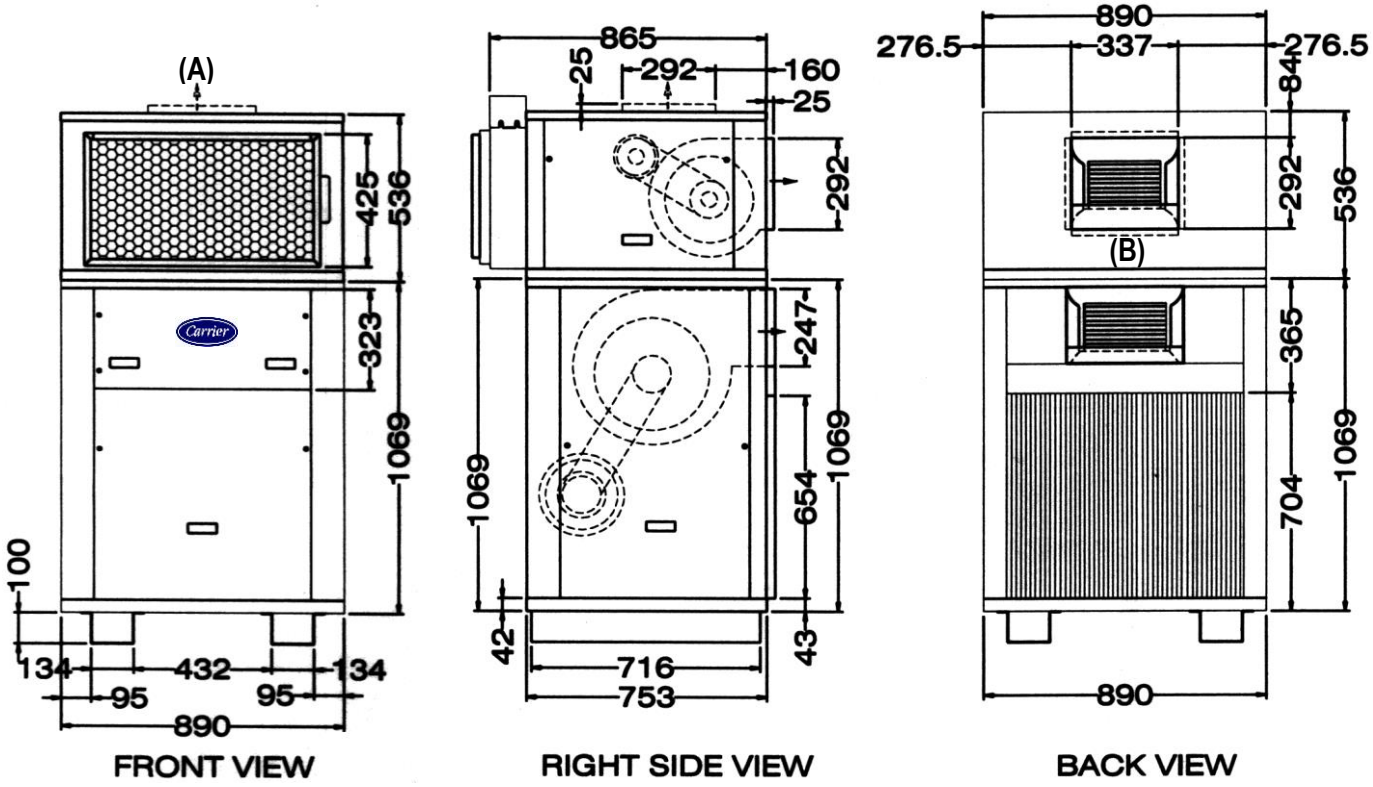
1. 1 kW = 860 Kcal/H = 3412 BTU/H = 0.284 Ref. Tons.
2. Nominal total cooling capacity and total input power are respectively 298000 Btu/hr and 44.68 kW (at nominal evaporator air flow and at nominal conditions:
   27°C DBT & 19°C WBT indoor air and 35°C DBT outdoor air).
3. When evaporator air flow is different from nominal air flow, use following multipliers:

MULTIPLIER FOR	Air flow	Multi	Air flow	Multi	Air flow	Multi
Total Capacity	9483	1.00	9984	1.02	10484	1.04
Total Input power		1.00		1.02		1.03
Sensible Capacity		1.00		1.04		1.09

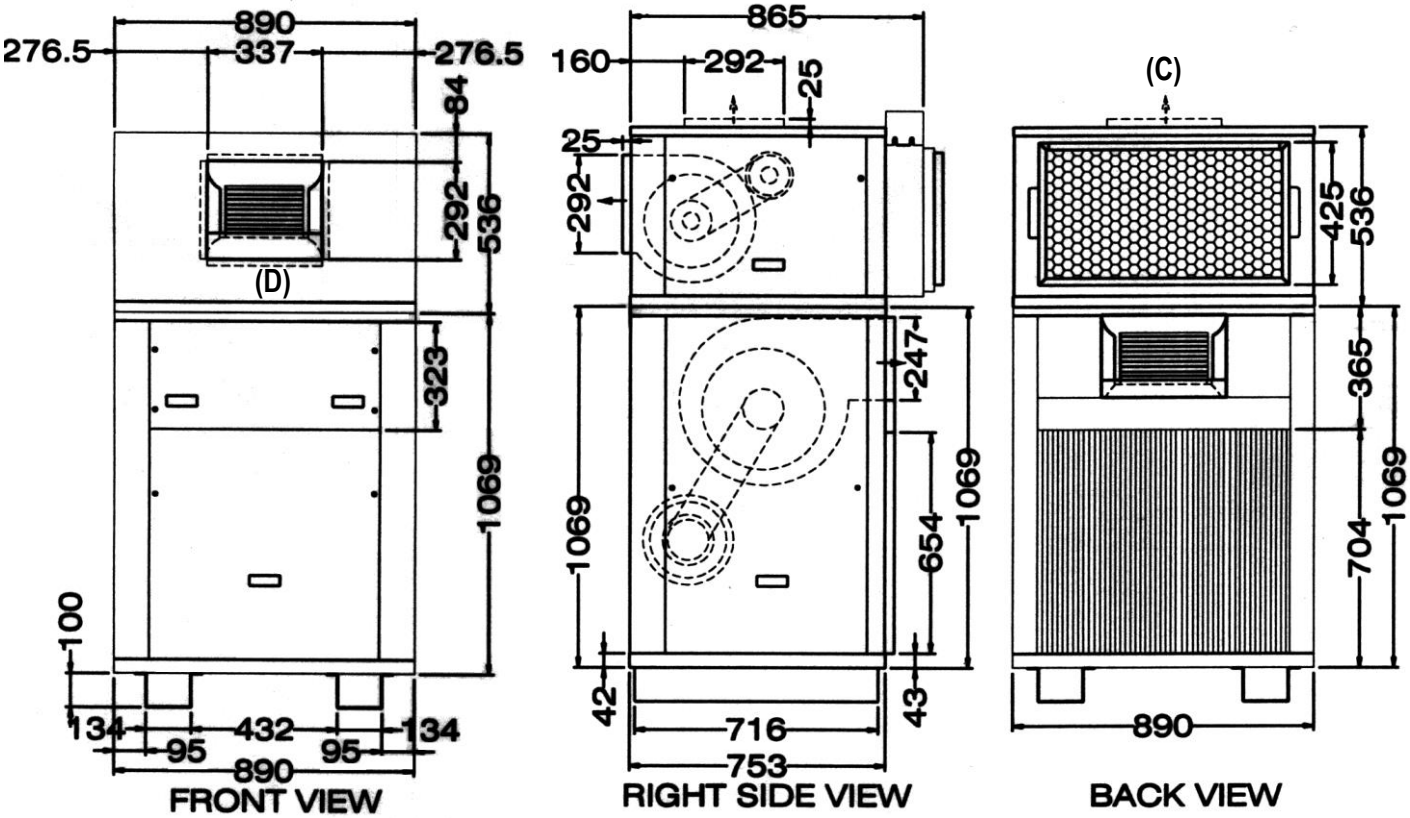
11. DETAILED DIMENSIONS (MM)

VERTICAL PACKAGED SYSTEM
50UB-55

Arrangement	Evaporator Air Return	Evaporator Air Supply
A	Horizontal back	Vertical
B	Horizontal back	Horizontal front

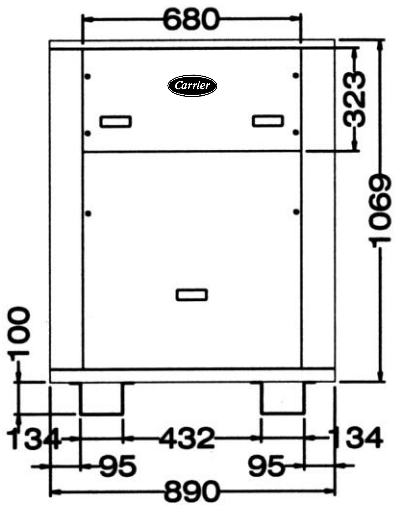


Arrangement	Evaporator Air Return	Evaporator Air Supply
C	Horizontal front	Vertical
D	Horizontal front	Horizontal back

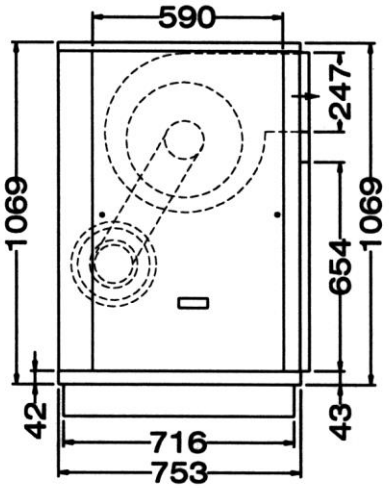


DETAILED DIMENSIONS (MM)

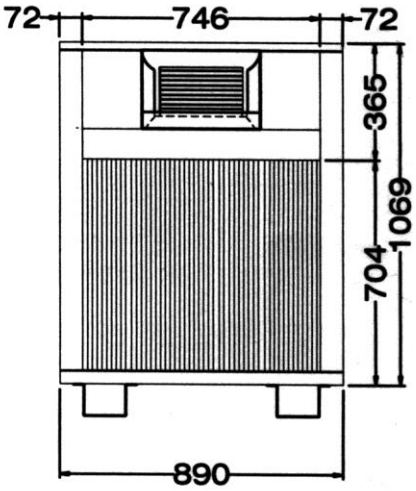
SPLIT SYSTEM CONDENSING UNIT
38BB-55



FRONT VIEW

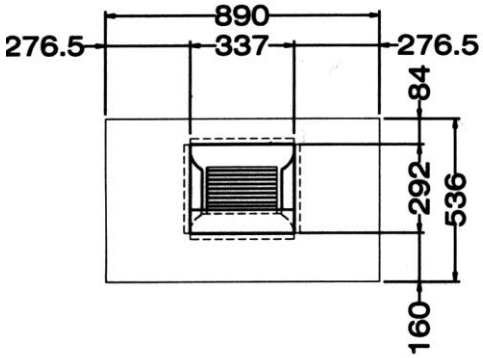


RIGHT SIDE VIEW

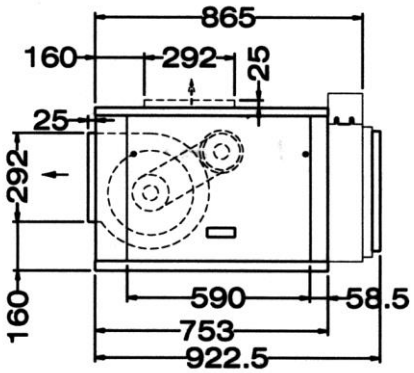


BACK VIEW

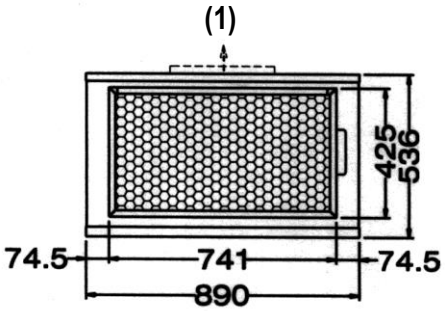
EVAPORATOR UNITS
40AB - 55



BACK VIEW



RIGHT SIDE VIEW



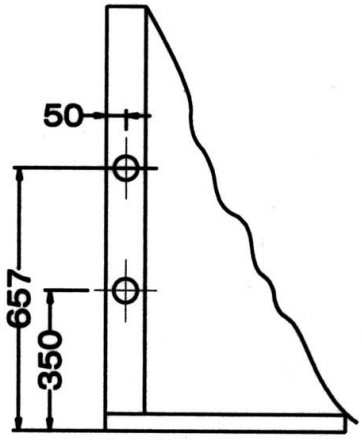
FRONT VIEW

Note (1): Field converted vertical air discharge for evaporator unit to be done at field.

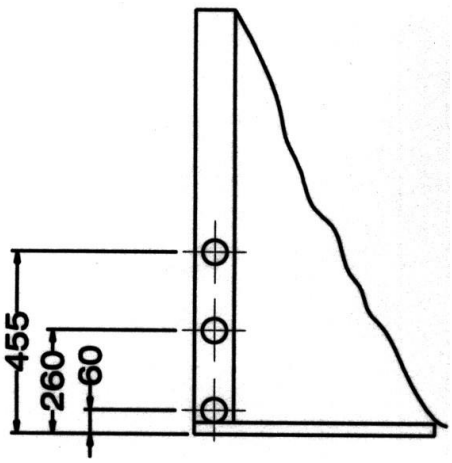
LOCATIONS AND DIAMETERS OF REFRIGERANT PIPING LINES AND CONDENSATE DRAIN LINE

Refrigerant Piping Lines and Drain Line

Size	Line	Ø	Qty
55	Suction	7/8”	1
	Liquid	1/2"	
	Drain	3/4"	



CONDENSING UNIT

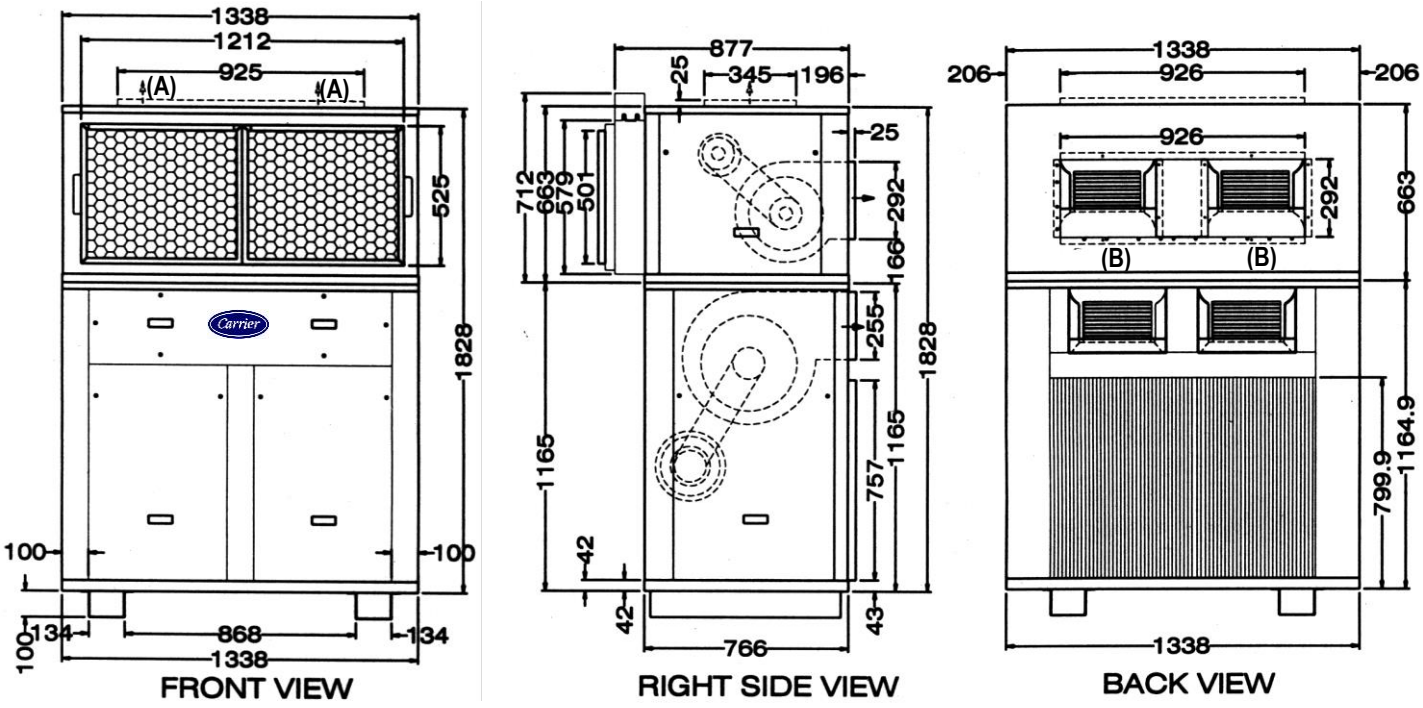


EVAPORATOR UNIT

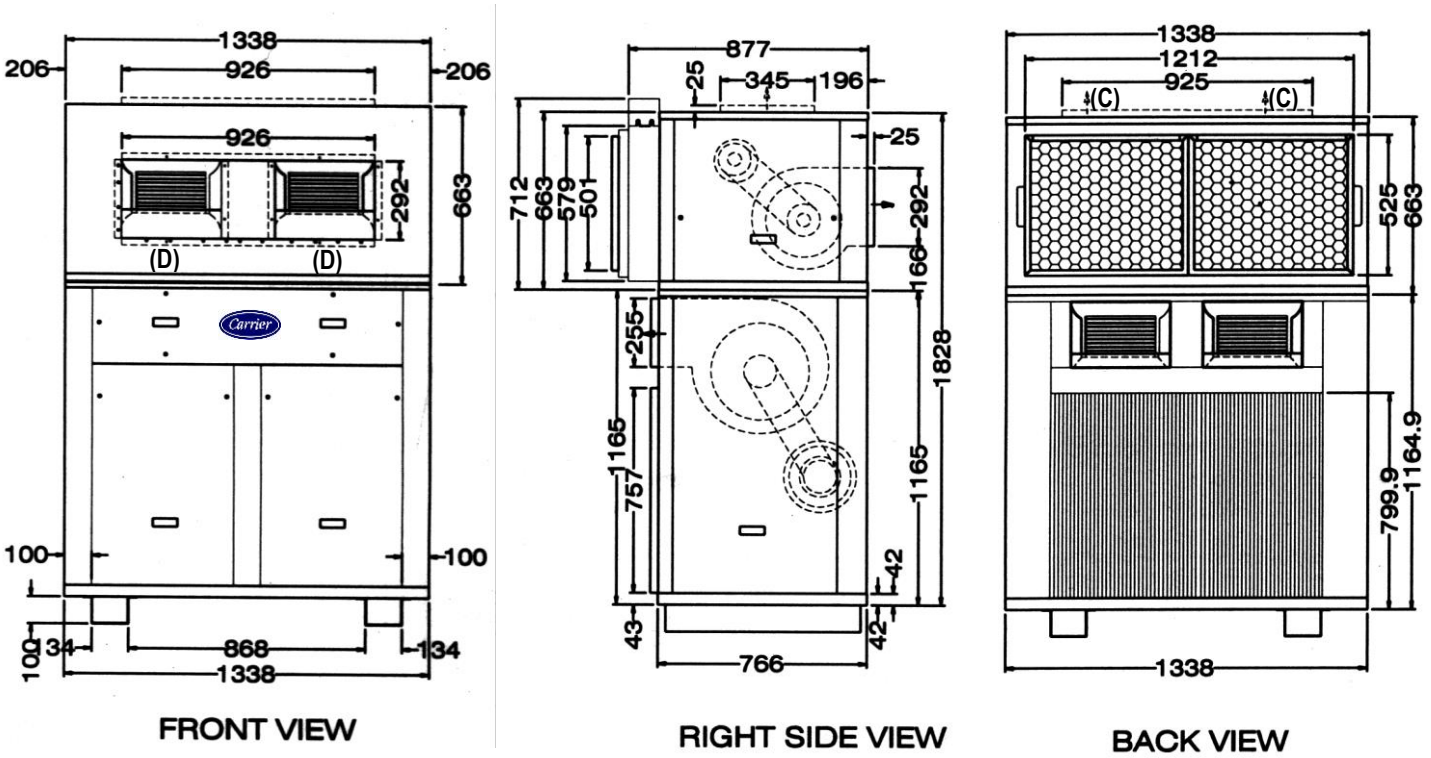
DETAILED DIMENSIONS (MM)

VERTICAL PACKAGED SYSTEM
50UB-90 & 50UB-110

Arrangement	Evaporator Air Return	Evaporator Air Supply
A	Horizontal back	Vertical
B	Horizontal back	Horizontal front

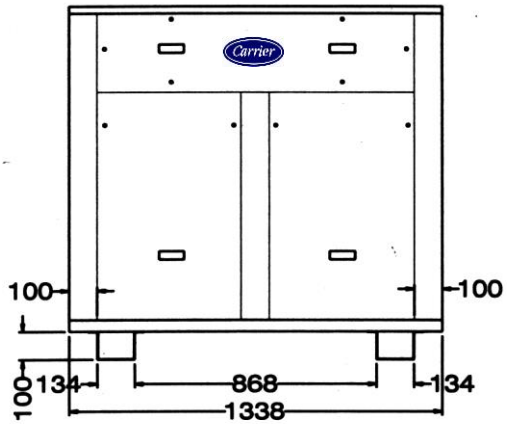


Arrangement	Evaporator Air Return	Evaporator Air Supply
C	Horizontal front	Vertical
D	Horizontal front	Horizontal back

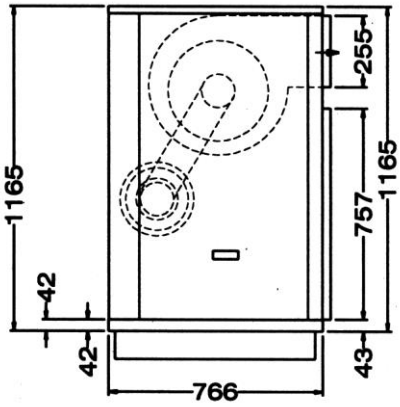


DETAILED DIMENSIONS (MM)

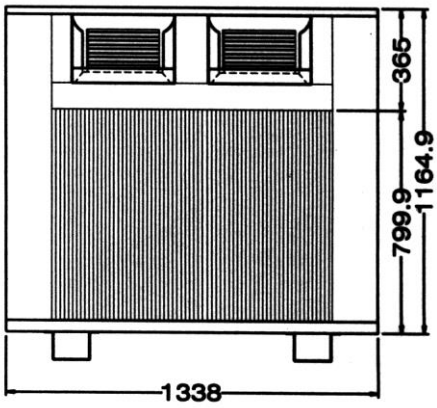
SPLIT SYSTEMS CONDENSING UNITS
38BB - 90 & 38BB - 110



FRONT VIEW

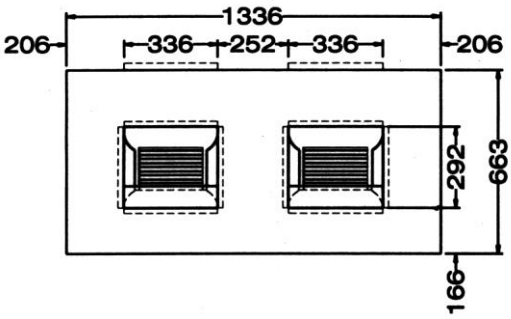


RIGHT SIDE VIEW

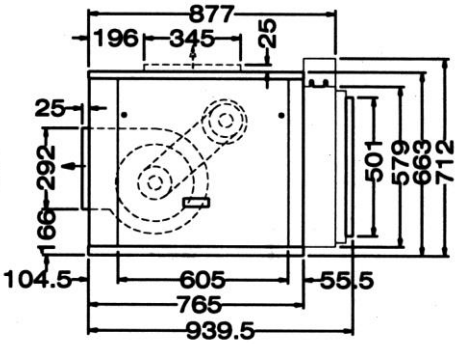


BACK VIEW

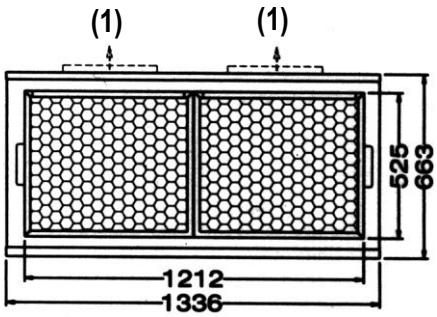
EVAPORATOR UNITS
40AB - 90 & 40AB – 110



BACK VIEW



RIGHT SIDE VIEW



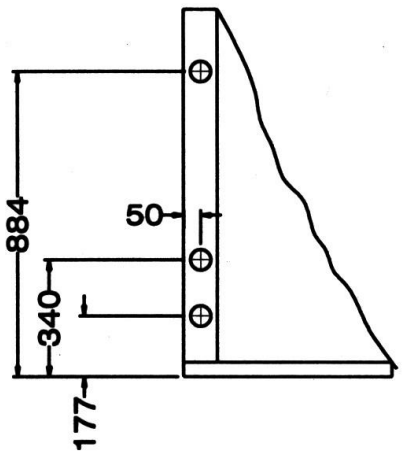
FRONT VIEW

Note (1): Field converted vertical air discharge for evaporator unit to be done at field.

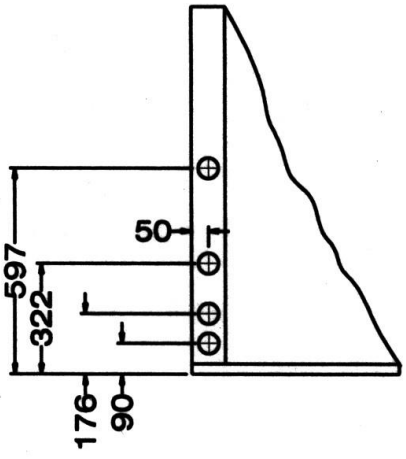
OUTLET LOCATIONS AND DIAMETERS OF REFRIGERANT PIPING LINES AND CONDENSATE DRAIN LINE

Refrigerant Piping Lines and Drain Line

Size	Line	Ø	Qty
90	Suction	1-1/8”	1
	Liquid	1/2"	
	Drain	3/4"	
110	Suction	7/8”	2
	Liquid	1/2"	2
	Drain	3/4"	1



CONDENSING UNIT

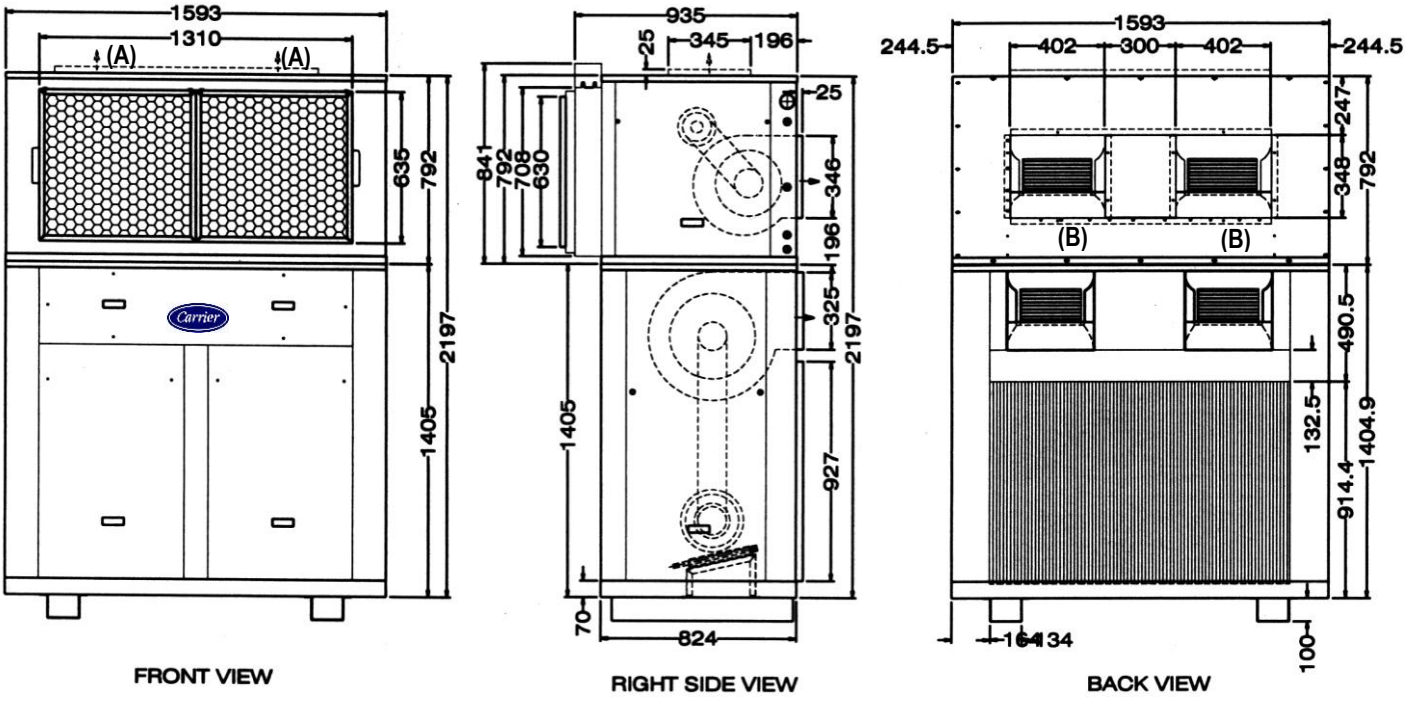


EVAPORATOR UNIT

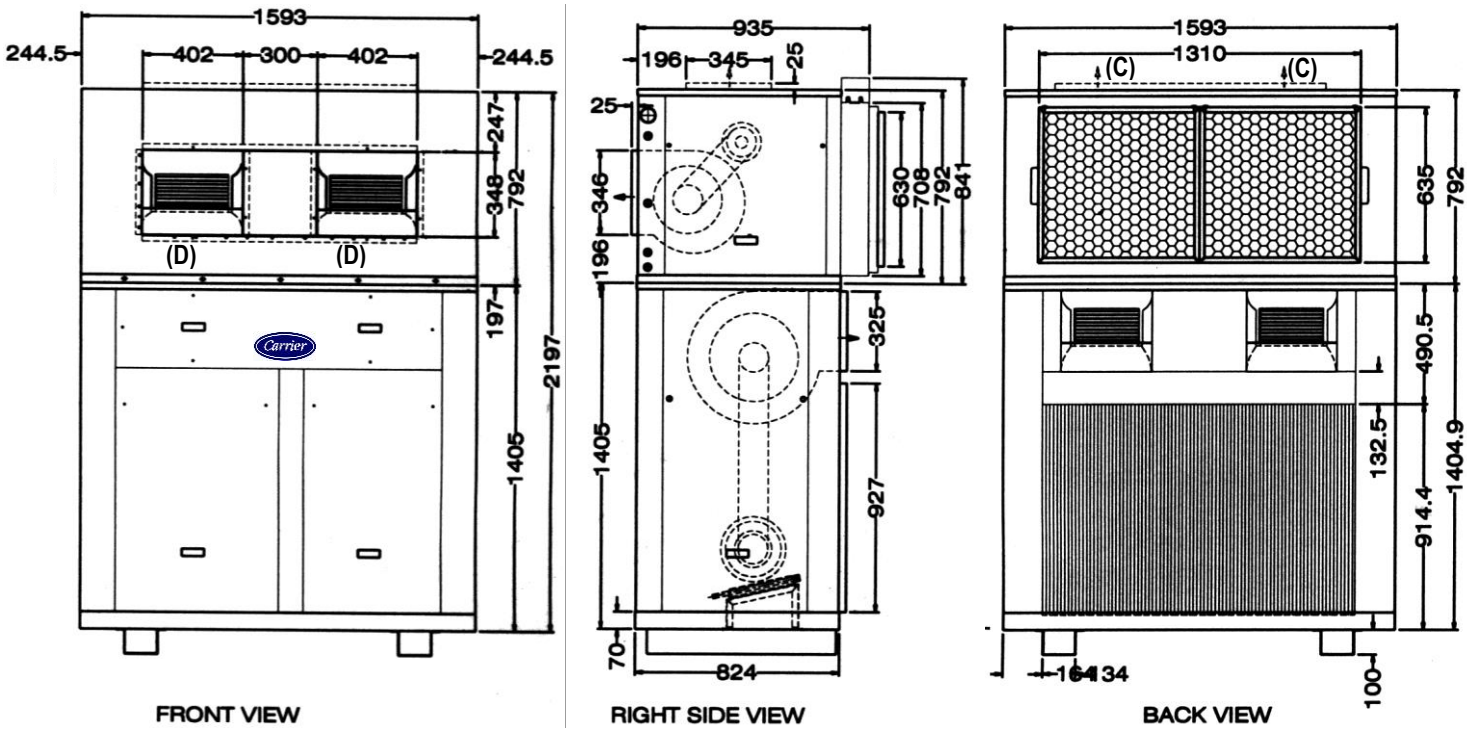
DETAILED DIMENSIONS (MM)

VERTICAL PACKAGED SYSTEMS
50UB-145 & 50UB-190

Arrangement	Evaporator Air Return	Evaporator Air Supply
A	Horizontal back	Vertical
B	Horizontal back	Horizontal front

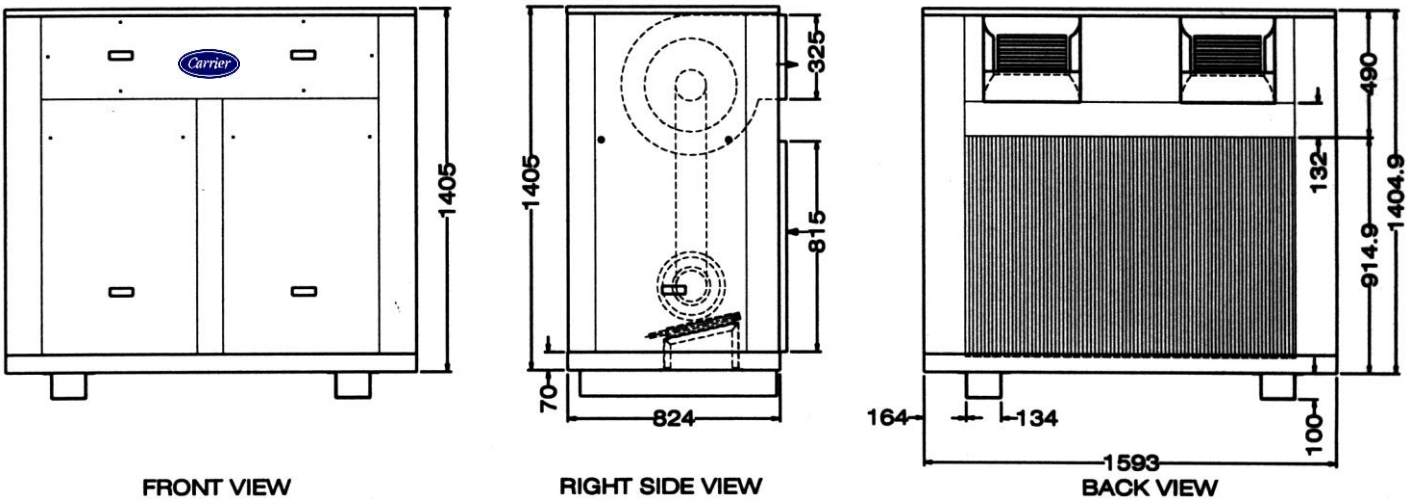


Arrangement	Evaporator Air Return	Evaporator Air Supply
C	Horizontal front	Vertical
D	Horizontal front	Horizontal back



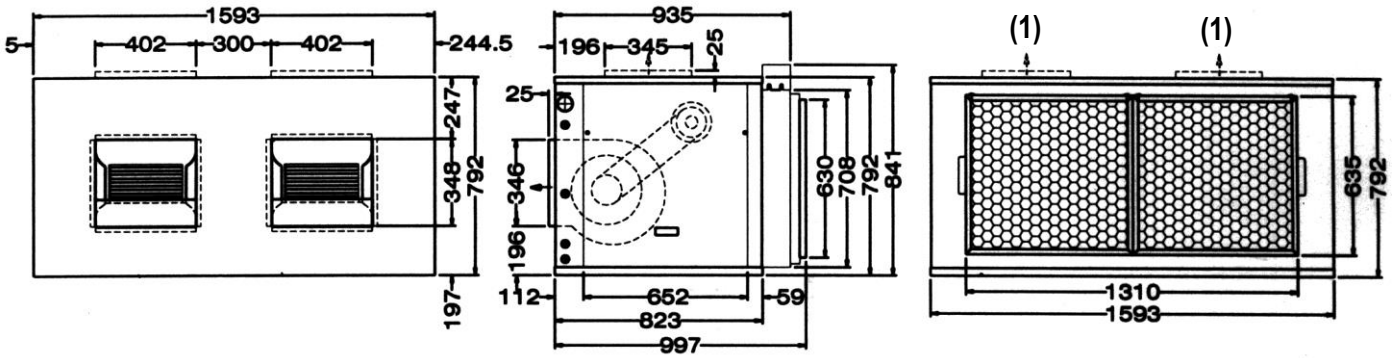
DETAILED DIMENSIONS (MM)

SPLIT SYSTEMS CONDENSING UNITS
38BB-145 & 38BB-190



FRONT VIEW | RIGHT SIDE VIEW | BACK VIEW

EVAPORATOR UNITS
40AB - 145 & 40AB - 190



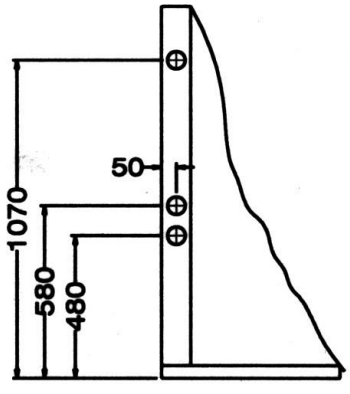
BACK VIEW | RIGHT SIDE VIEW | FRONT VIEW

Note (1): Field converted vertical air discharge for evaporator unit to be done at field.

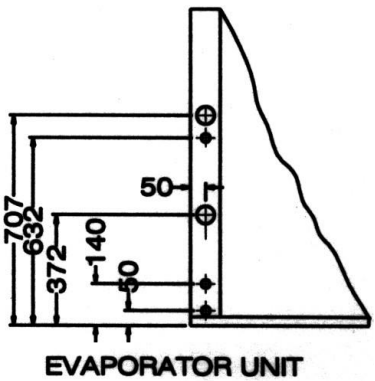
OUTLET LOCATIONS AND DIAMETERS OF REFRIGERANT PIPING LINES AND CONDENSATE DRAIN LINE

Refrigerant Piping Lines and Drain Line

Size	Line	Ø	Qty
145 190	Suction	1-1/8"	2
	Liquid	1/2"	2
	Drain	3/4"	1



CONDENSING UNIT

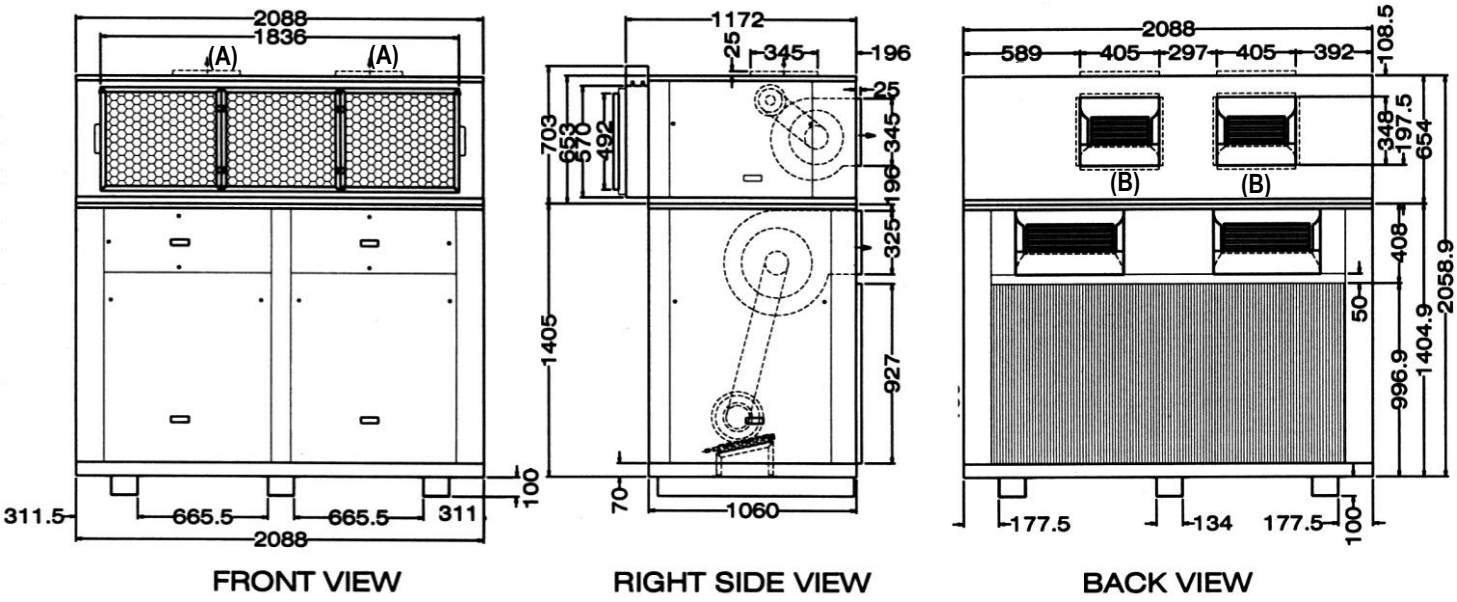


EVAPORATOR UNIT

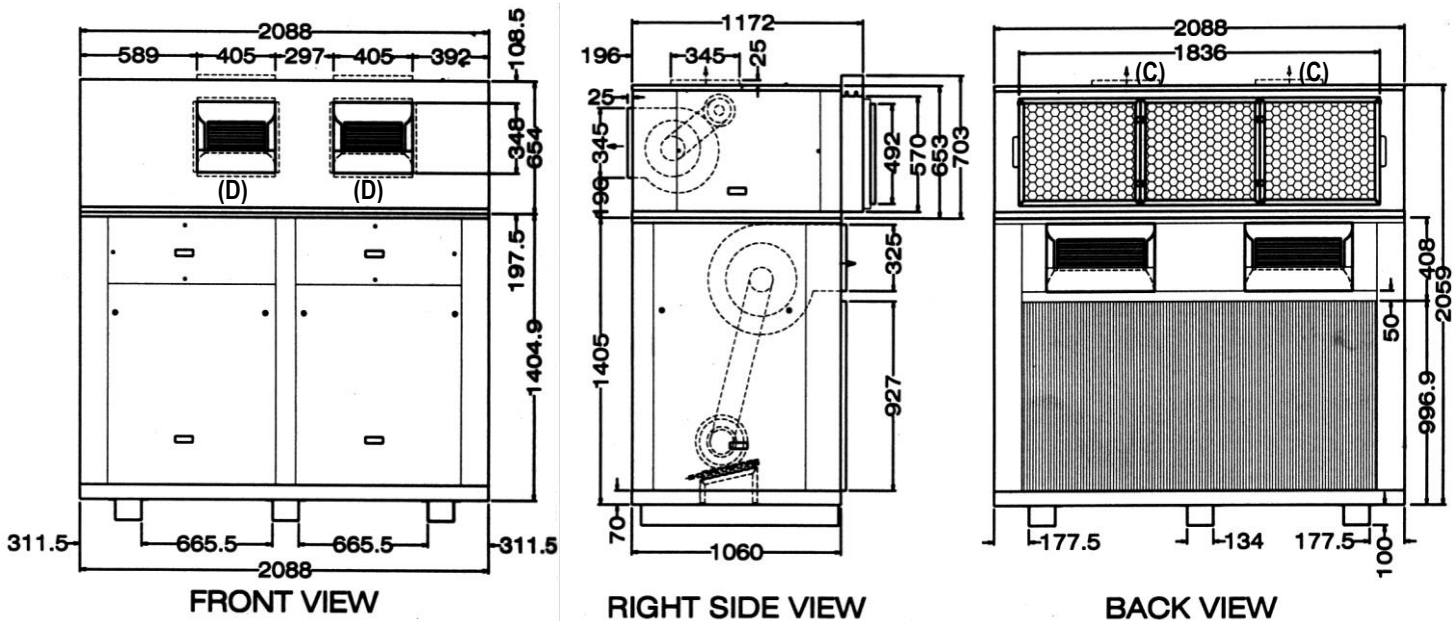
DETAILED DIMENSIONS (MM)

VERTICAL PACKAGED SYSTEM
50UB-250

Arrangement	Evaporator Air Return	Evaporator Air Supply
A	Horizontal back	Vertical
B	Horizontal back	Horizontal front

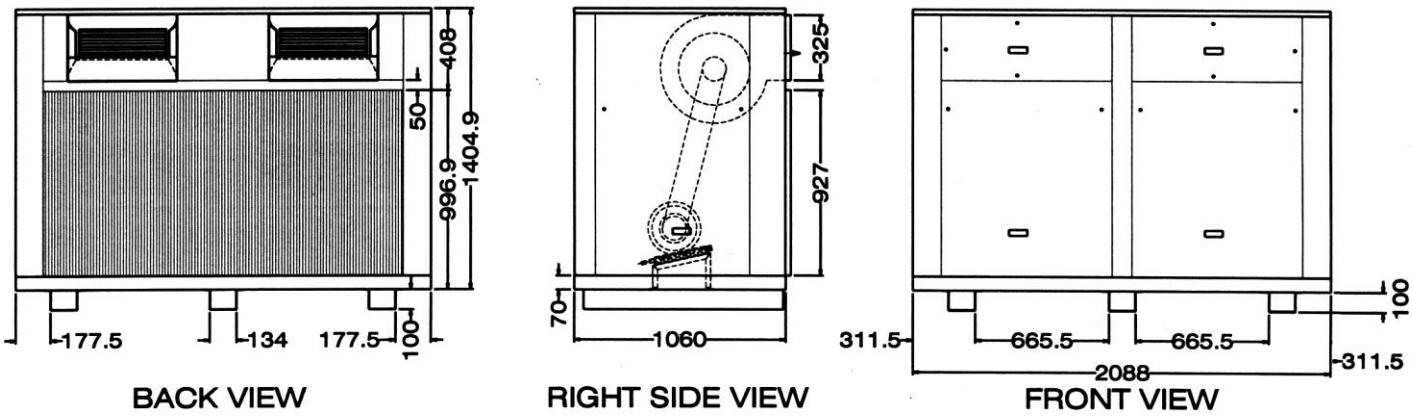


Arrangement	Evaporator Air Return	Evaporator Air Supply
C	Horizontal front	Vertical
D	Horizontal front	Horizontal back

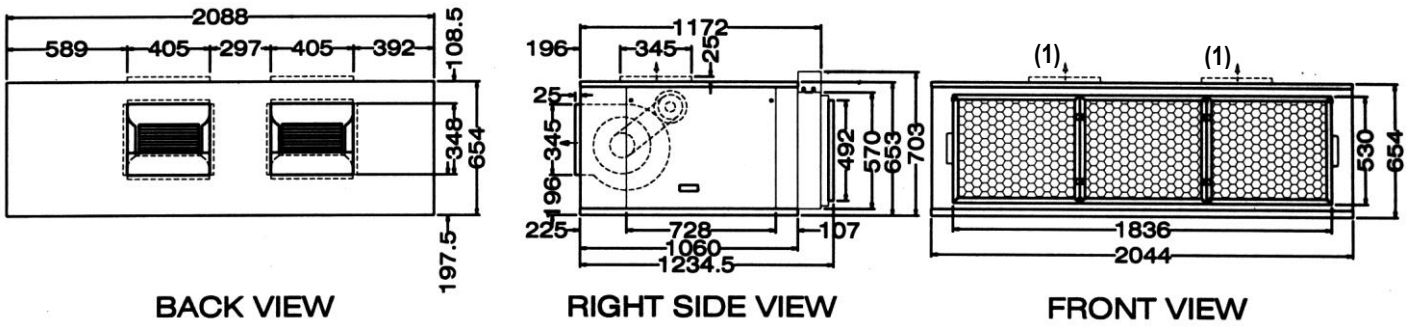


DETAILED DIMENSIONS (MM)

SPLIT SYSTEM CONDENSING UNIT
38BB-250



SPLIT SYSTEM EVAPORATOR UNIT
40AB–250

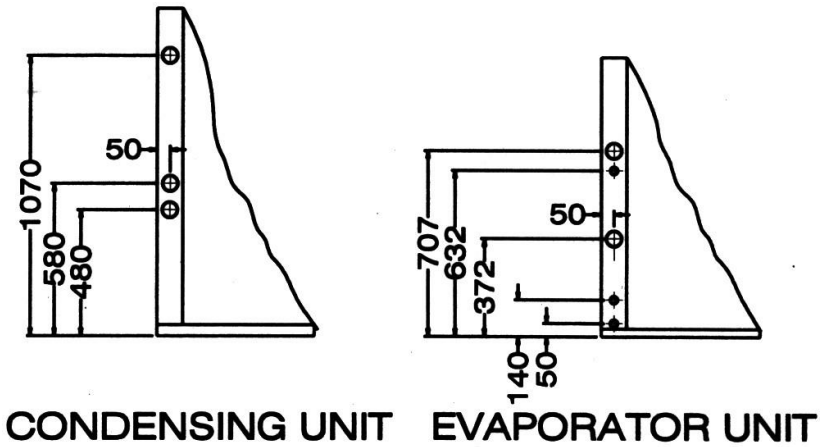


Note (1): Field converted vertical air discharge for evaporator unit to be done at field.

OUTLET LOCATIONS AND DIAMETERS OF REFRIGERANT PIPING LINES AND CONDENSATE DRAIN LINE

Refrigerant Piping Lines and Drain Line

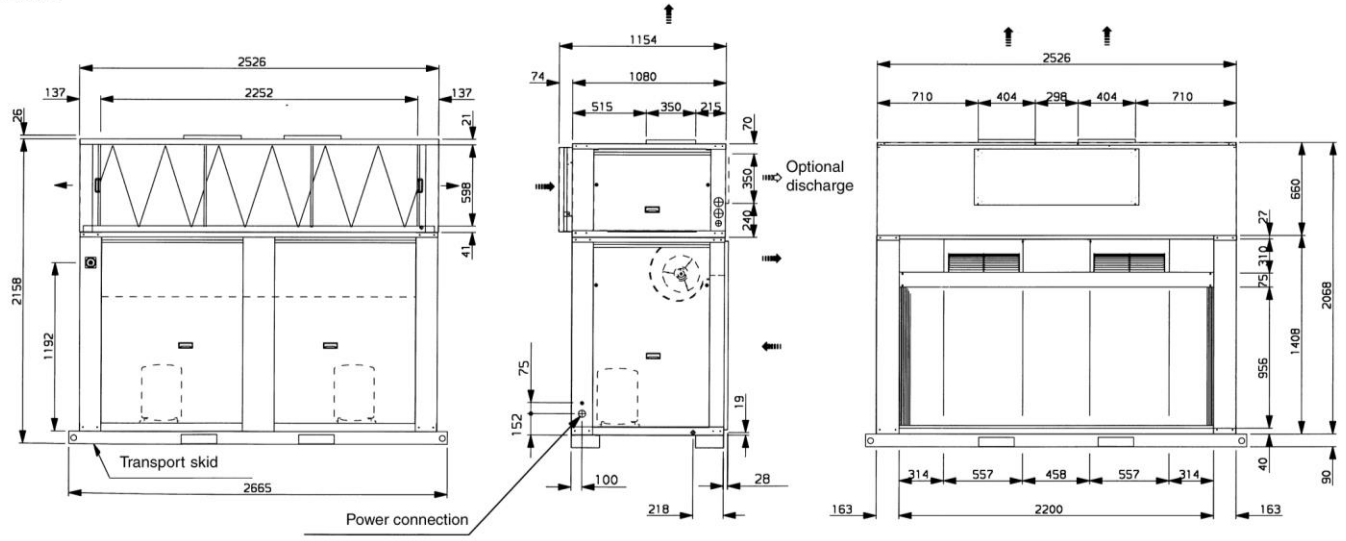
Size	Line	Ø	Qty
250	Suction	1-1/8"	2
	Liquid	5/8"	2
	Drain	3/4"	1



DETAILED DIMENSIONS (MM)

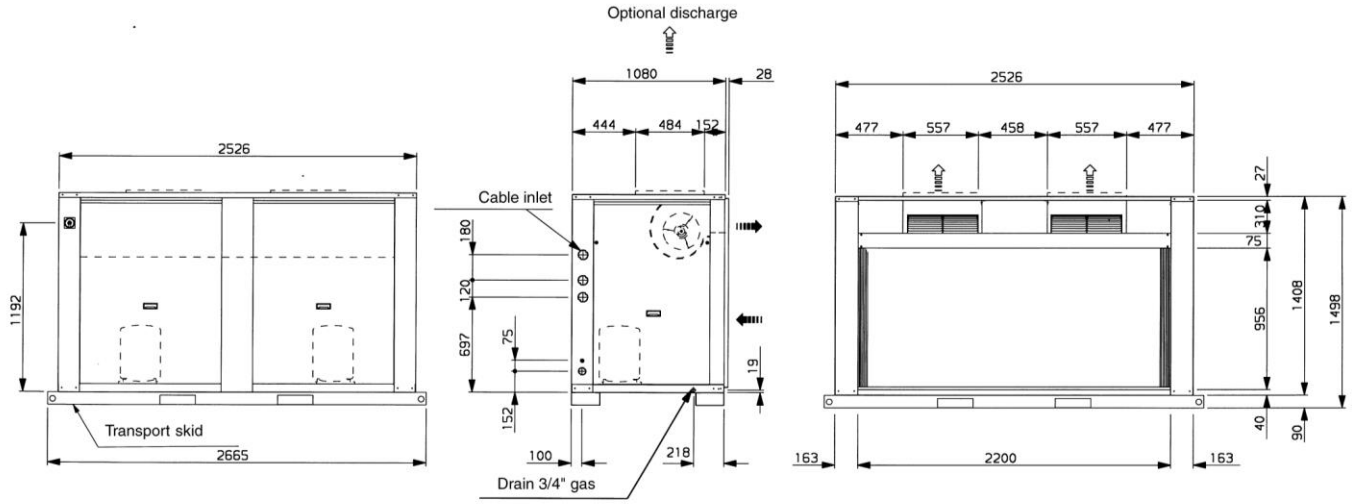
VERTICAL PACKAGED SYSTEMS

50UB300



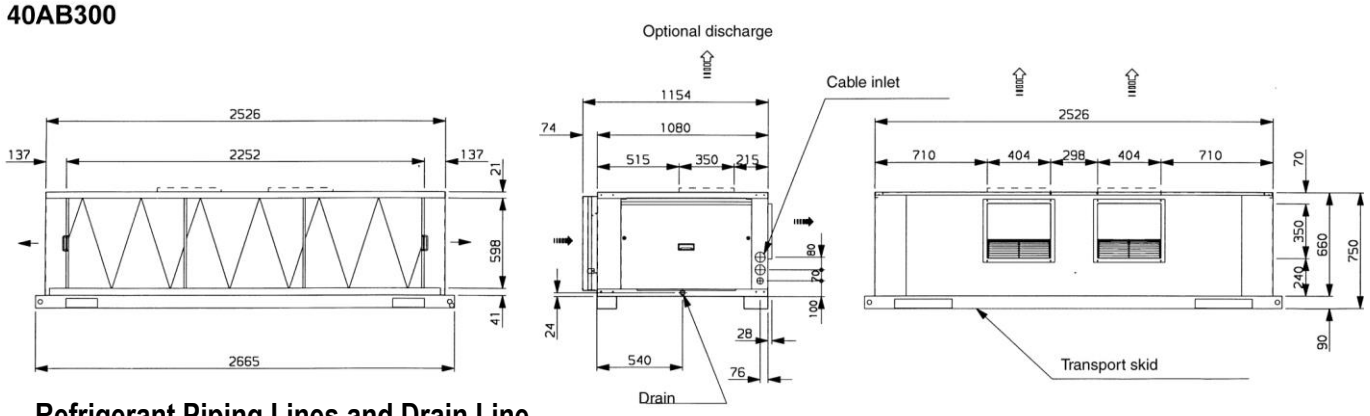
SPLIT SYSTEM – CONDENSING UNIT

38BB300



SPLIT SYSTEM – EVAPORATOR UNIT

40AB300



Refrigerant Piping Lines and Drain Line

Size	Line	Ø	Qty
300	Suction	1-3/8”	2
	Liquid	7/8"	2
	Drain	1"	1

12. SELECTING INSTALLATION LOCATION

12.1 FOR SPLIT SYSTEM

12.1.1 CONSIDERATION FOR SELECTING INSTALLATION LOCATION OF EVAPORATOR UNIT

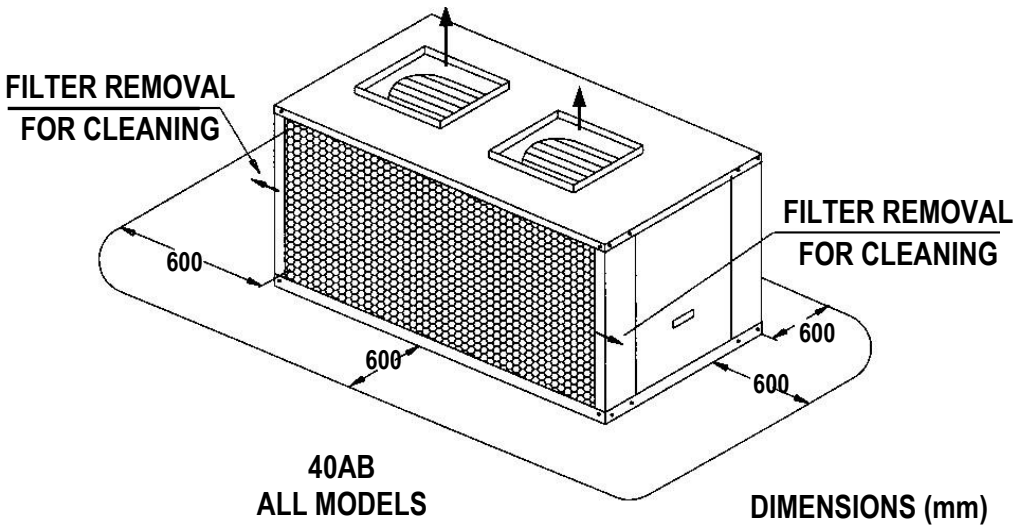
a. Location of evaporator unit relative to condensing unit

The installation location of evaporator unit should be as close as possible to the condensing unit to reduce length of refrigerant piping lines, electrical cables and drain line to facilitate the installation works.

Avoid excessive distance between condensing and evaporator units

Avoid excessive height between condensing and evaporator units

b. Minimum Space for service and maintenance



40AB
ALL MODELS

DIMENSIONS (mm)

Notes:

(1) Minimum clearance of 600mm is recommended at front of unit for service and access to air filters, electric heaters, evaporator coil and electrical controls compartment.

(2) Minimum clearance of 600mm is recommended at back of unit for service and access.

(3) Minimum clearance of 600mm is recommended at side of unit for service and access to air filters, refrigerant controls, electrical controls, blowers, motor, pulleys and belts.

c. Weight of Evaporator Unit:

The installation location of evaporator unit should be able to support the operating weight of evaporator unit to avoid any vibrations.

12.1.2 CONSIDERATIONS FOR SELECTING INSTALLATION LOCATIONS OF CONDENSING UNIT

a. Location of condensing unit relative to evaporator Unit

The installation location of condensing unit should be near to the evaporator unit to reduce length of refrigerant piping lines and electrical cables and to facilitate installation works.

Avoid excessive distance between condensing and evaporator units

Avoid excessive height between condensing and evaporator units

b. Location of Electrical Power Supply

The electrical power supply should be close to the condensing unit to facilitate electrical wiring connections and reduce length of electrical cables.

c. Weight of Condensing Unit

The installation location of condensing unit should be able to support operating weight of condensing unit, to avoid any vibrations.

d. Effect of Direct Sunlight

The installation location of condensing unit is preferable to be far away from the direct sunlight.

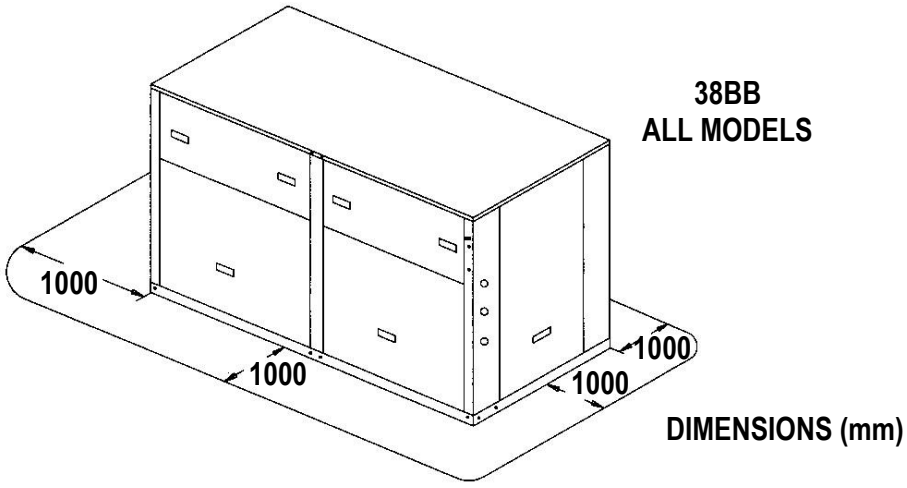
e. Effect of heat sources, steam or flammable gas

The installation location of condensing unit should be far away from heat sources, steam or flammable gas.

f. Cleanness of location

The installation location of condensing unit should be free of dust or any material, which can cause clogging of condenser coil. When installing unit on the ground, select a location not subjected to flooding.

g. Minimum Space for Service and Maintenance



(1) Minimum clearance of 1000mm is recommended at side of unit for service and access to refrigerant controls, electrical controls, blowers, motor, pulleys and belts.

(2) Minimum clearance of 1000mm is recommended at rear of unit for service and access to condenser coil.

(3) Minimum clearance of 1000mm is recommended at front of unit for service and access to main electrical controls compartment, compressor and blowers.

12.3 CONSIDERATIONS FOR SELECTING INSTALLATION LOCATIONS FOR VERTICAL PACKAGED SYSTEM

a. **Weight of Vertical Packaged System**

The installation location of system should be able to support operating weight of system, to avoid any vibrations.

b. **Effect of Direct Sunlight**

The installation location of outdoor unit is preferable to be far away from the direct sunlight.

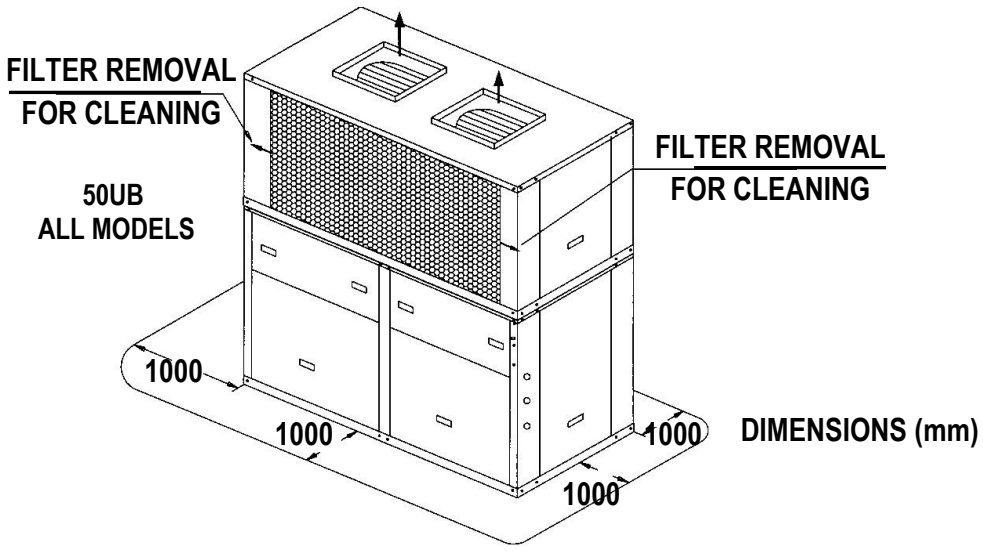
c. **Effect of heat sources, steam or flammable gas**

The installation location of outdoor unit should be far away from heat sources, steam or flammable gas.

d. **Cleanness of location**

The installation location should be free of dust or any material, which can cause clogging of condenser coil. When installing unit on the ground, select a location not subjected to flooding.

e. **Minimum Space for Service and Maintenance**



(1) Minimum clearance of 1000mm is recommended at rear of unit for service and access to air filters and evaporator / condenser coil.

(2) Minimum clearance of 1000mm is recommended at front of unit for service and access to main electrical controls compartment, compressor.

(3) Minimum clearance of 1000mm is recommended at side of unit for service and access to air filters, refrigerant controls, blowers, motor, pulleys and belts.

NOTES

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Feb. 2021

Carrier is committed for continuous improvement of Carrier products according to national and international standards to ensure the highest quality and reliability standards, and to meet market regulations and requirements.

All specifications subject to change without prior notice according to Carrier policy of continuous development.

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Occupational Health and Safety Management System
certification
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Certificate Number :
20.0297.026

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certification
Certified By TUV
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