

# PACL Series

## Packaged Air Conditioners



50Hz



Range 4 TR to 28 TR  
(14 kW to 98 kW)



CE

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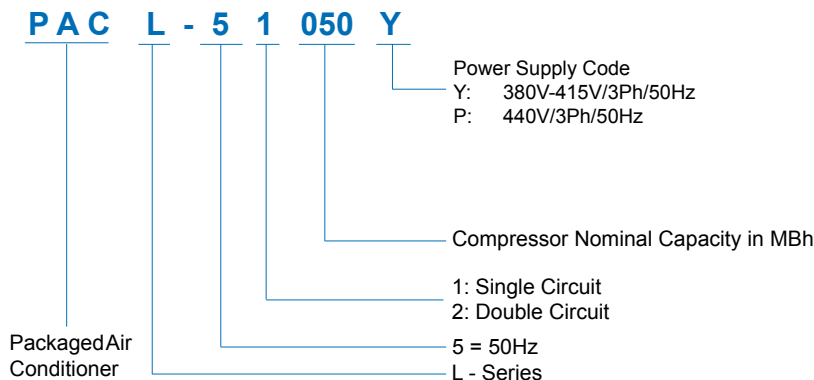
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## Legend

The following legends are used throughout this manual:

AFR .....	Air Flow Rate	L/s .....	Liters per second
BPF .....	By Pass Factor	MBh .....	BTUH x 1000
CFM .....	Cubic feet per minute	Pa .....	Pascal
EER .....	Energy Efficiency Ratio	Ph .....	Phase
ESP .....	External Static Pressure	PI .....	Power Input of Compressor in kW
Hz .....	Hertz	RPM .....	Revolutions Per Minute
in. wg .....	Inch water gauge	RPS .....	Rated Power Supply
kW .....	Kilowatts	TR .....	Tons of Refrigeration
kg .....	Kilogram	V .....	Volts
lbs .....	Pounds weight		

## Nomenclature



**SKM reserves the right to change, in part or in whole the specifications of its Air Conditioning Equipment at any time in order to add the latest technology. Therefore, the enclosed information may change without any prior notice.**

## Introduction

New SKM **PACL** Series Packaged Air Conditioners are designed and manufactured to meet the requirements of Gulf's severe climatic conditions and are built specifically for ducted systems which will enable them to be installed easily on roof tops or on the ground.

The **PACL** series Packaged Air Conditioners are compact, quiet, most efficient and self contained units are ideal for commercial and top end residential applications.

SKM **PACL** Series are available in 16 different sizes from 4 to 28 TR (14 to 98 kW) in 50 Hz at nominal AHRI conditions. PAC-L units are designed, rated and manufactured in accordance with AHRI 210/240 and 340/360 standards.

The **PACL** series units from SKM are completely assembled, leak tested, vacuumed, internally wired and fully charged with R-22 refrigerant at factory. Each unit is fully factory tested before dispatch and is ready for installation. All that is required on the site is to connect ducts, drain lines, main power supply and field wiring to the thermostat. This greatly reduces the installation works and cost.

SKM **PACL** series packaged air conditioners are designed to operate in a wide ambient temperature range between 50°F (10°C) to 125.6°F (52°C), based on specific conditions & model applies. Two independent refrigeration circuits are provide where two compressors are used.

The **PACL** series are tested and operated satisfactorily at 125°F (51.7°C) ambient temp. with more than 2 hours continuously running without tripping or over heating.

SKM provides qualified service and stock of replacement parts in all major cities of the G.C.C. countries, Egypt, Jordan, and Pakistan. See back cover for details or call SKM.

**SKM Air Conditioning LLC**



*You name it.... We cool it.*



## General Features

The **PACL** Series Packaged Air Conditioners are yet another new unique series from SKM incorporates many salient features which, together, provides a heavy duty, robust, long lasting commercial unit meant for high end residential and commercial applications. The **PACL** series models combine high efficiency condenser and cooling coil, evaporator blower and heavy duty motor in addition to premium safety and operational controls.

The complete **PACL** packaged unit provides an extremely rugged, long life, energy efficient, self contained packaged air conditioner that will provide cooling with higher efficiency over a long and extended life.

What makes **PACL** series yet another model in the top class range of SKM products is the use of:

- High efficiency totally sealed scroll hermetic compressors.
- Totally enclosed, Class F insulated condenser and evaporator fan motors.
- Heavy duty condenser and evaporator coils optimised in design for long-life maintenance free operation.
- Cabinet construction specifically designed for Gulf climates.
- Electronic control board for unit operation.
- Typically, much heavier gauge tubing and thicker fins for ruggedness and long life.

## Main Component Features

The common standard features of all **PACL** series packaged units include the following

### Compressors

Compressors used in **PACL** packaged unit series are hermetically sealed, compact scroll with the following features:

- High Efficiency.
- Quiet operation, Low Sound levels.
- Better debris handling.
- Self compensating of wear (“wears-in” vs. “wears-out”).
- 70% fewer moving parts than comparably sized reciprocating compressors
- Internal motor protection / Advanced scroll temperature protection.
- Suction gas motor cooling.
- Suction screen.
- Disc type check valve.
- Centrifugal oil pumps with filter and magnet.
- Brazed fittings or Rotalock options.

## Condenser Coils

Condenser coils are manufactured from Corrugated aluminium fin and Hi-X seamless copper tubes mechanically bonded to aluminium fins to ensure optimum heat transfer. All coils are tested against leakage by air pressure 525psig (3620kPa) under water. An integral subcooling circuit is incorporated in the lower section of the condenser to increase system capacity. The additional condenser surface provides more cooling using less energy at no additional cost.

## Condenser Fans

Condenser fans are propeller type with aluminum alloy blades and are directly driven by electric motors. Motors are Totally Enclosed Air Over (TEAO), six pole or four pole with Class F insulation and IP54/55 protection depending on models. Complete fan assembly is provided with fan guard.

## Evaporator Coils

Evaporator coils are manufactured from seamless copper tubes mechanically bonded to aluminium corrugated fins to ensure optimum heat transfer. All evaporator coils are tested against leakage by air pressure of 300 psig (2068 kPa) under water. Coils conform to AHRI-410.

## Evaporator Fan & Drive

Evaporator fans are forward curved centrifugal double inlet, double width, statically and dynamically balanced. Bearings used in the fans are self aligning and lubricated for life. Evaporator fans are belt driven and use “V” belts with an adjustable variable pitch motor pulley resulting in an accurate fan air flow adjustment.

Fans are driven by Totally Enclosed, IP55 Protected, 4 pole Class F insulated electric motors. The motors are factory wired to the control panel where the motor starters are located to control the operation of the motors. The motors conform to relevant IEC standards.

## Casing and Structure

The unit casing used in **PACL** series is made of hot dip galvanized (zinc coated) steel sheets, conforming to JIS-G 3302 and ASTM A653, which is phosphatized and baked after an electrostatic powder coat of approx. 60 microns. This finish and coating can pass a 1000 hour in 5% salt spray testing at 95°F (35°C) and 95% relative humidity as per ASTM B117.

The evaporator section is insulated from all the sides with 1” thick fiber glass insulation with extremely tough and durable black composite surface. The insulation cum sound liner meets the fire requirements of NFPA90A & 90B and is secured with mechanical fasteners in addition to water resistant adhesive.

## Control Panel

The PACL packaged Air Conditioners are provided with IP-54 control panel enclosure comprising all starting, operating & safety controls. The panel is factory wired in accordance with NEC 430 & 440, labelled, tagged and features 220V / 240V controls.

- Starting contactors for compressors and motors.
- Internal overload protection for compressors.
- Internal OR External overload protection for the motors (depending on the model).
- Electronic control board for unit operation.
- Diagnostic LEDs on the control board for easy troubleshooting .
- Compressor short cycling protection.
- Control switch for unit on/off.
- Control circuit breaker.
- Power and control circuit terminal blocks.
- High pressure protection.
- Low pressure protection.

## Optional Features

As with all SKM air conditioning units, the **PACL Series** Packaged Units are available with multitude of optional features available on request:

### Double Skin Evaporator (DSE)

Double skin evaporator section with galvanized inner skin.

### Double Skin Insulation (DSI)

Inner skin in the evaporator section is provided with foam board insulation.

### Temperature Based Economizer (ECRU)

Simple temperature based economizer.

### Alternative Condenser Material

Made of copper tubes and alternative fin material and/or protective coating.

- Pre Coated aluminum fins (FAP).
- Aluminum Fins with Aeris post Coat Protection (FAA).
- Copper Fins (FC).
- Copper Fins with Aeris post Coat Protection (FCA).

### Alternative Evaporator Material

Made of copper tubes and alternative fin material and/or protective coating.

- Pre Coated aluminum fins (EFAP).
- Aluminum Fins with Aeris post Coat Protection (EFAA).
- Copper Fins (EFC).
- Copper Fins with Aeris post Coat Protectionn (EFCA).

### Anti-Freeze Thermostat (AFT)

For evaporator coil freeze -up protection.

### 2" (50mm) Flat Filter Section (FSIP2)

For heavy filtration need a section can be provided without or with aluminium cleanable filter.

### Electric Heating (HTR1)

Electric heating batteries are made up of finned heating elements, constructed from high quality 80/20 nickel chrome resistance wire centred in metal tube by compressed magnesium oxide. Helical fins are tightly wound around the tubular heating element. Heater batteries when ordered comes with stage contactors, primary auto reset thermal safety cut-out, secondary manual reset thermal safety cut-out and air flow switch. Power fuses / circuit breaker are provided for heaters with total ampere exceeding 48 amperes.

For smaller heaters, power fuses can be provided if specified. Control of the heaters will be from the unit controller.

Following are the optional kW ratings for electric heater. Ratings other than those specified here can be supplied on request. Consult SKM for details

MODEL PACL	Heater (kW)	STAGES
51050	4.5	1
51060		
51070		
51085	9	1
51095		
52110		
52120	18	2
52145		
52160		
52180		
52205		
52225	24	2
52240		
52260		
52290		
52330		

Table 1

### Western Make Scroll Compressor (WMSC)

Western make scroll compressor.

### Compressor Run Hour Meter (RHM)

To monitor operating hours of each compressor.

### Circuit Breaker for compressor (CBC)

For those electrical specification which requires additional short circuit and overload protection for the compressors.

### Rotalock Valves on compressors (RVC)

For additional facilitation of maintenance of unit.

### External Overload Protection (EOP)

For those electrical specification requires additional overload protection for the compressors. **(Not required with CBC option)**



### Advanced Micro Processor Control System (AMCS)

An advanced microprocessor based controller can be provided for the units as option, in case required. This controller will be with built-in display keypad and has many features. For this feature, additional options can be provided and to be specified during time of order:

- **DTS – Duct Temperature Sensor \***

(In order to control the unit based on return/supply air duct temperature). **(This is not required with CHTS options)**

- **BMS – BMS Protocol \***

(For interfacing the units with major BMS protocols such as BACnet, Modbus or LON. An extra hardware may be required depending on the protocol)

### Pump Down Facility (PD)

The compressor will switch off each time with a Pump Down Cycle in order to prevent Liquid refrigerant migration to the compressor during off Cycle periods.

With this option, each circuit will be provided with an additional discharge check valve (if required) to prevent Refrigerant Migration from High side to Low side when the compressor is off.

Applicable for models from PACL-52290 to 52330.

### Pump Down Facility with solenoid Valve (PDS)

The compressors will switch off each time with a Pumpdown Cycle in order to prevent Liquid refrigerant migration to the compressor during Off Cycle periods.

Applicable for models from PACL-51050~52260

### Extra Ball Valve (XFBV)

Extra ball valve can be incorporated in the liquid line.

### Pressure relief valve (PRV)

To protect the unit from being over - pressurized.

### Pressure Gauges (SDG1)

Suction and discharge indication of each refrigerant circuit. Gauges mounted outside the Control Panel.

### Manual Reset Type High Pressure Switch (MHP)

To replace standard auto reset, capsule type pressure switch.

### Liquid Line Sight Glass (RSG)

For monitoring refrigerant charge and to provide visual indication of moisture presence in the system.

### Condenser Coil Guard (CGP)

Wire mesh guard, in painted finish for condensers coils. Recommended on ground level installation where coil needs to be protected against vandalism.

### Stainless Steel Drain Pan (Grade 304) (SDP)

Stainless steel drain pan(Grade 304). Insulation under drain pan as per SKM standard.

### IP 55 Control Panel (ICP)

Control Panel for special applications to meet IP55 requirements.

### Stainless Steel Drain Pan (SSP)

Heavy gauge 316 stainless steel drain pan under the entire cooling coil.

Insulation under drain pan as per SKM standard.

### Up Size Evaporator Motor\*\* (USM)

Unit with one up size evaporator motor.

### Circuit breaker for Motors\*\* (CBM)

For those electrical specification which requires additional short circuit and overload protection for the fan motors.

### Main Isolator (without door interlock) (ISO)

For main power isolation. **(Consult SKM)**

### Control Transformer (CXT)

This option is necessary and available for unit models rated for 440V/3PH/50Hz or power supplies without neutral.

When ordering for these voltages, this option must be ordered.

### BMS Interface Volt Free Contacts (BMVF)

Volt free contacts for run status, common fault status, auto mode status and provision for remote on/off shall be provided as option if required.

For additional requirements, please contact SKM.

### Voltage Monitor Module (VMM)

Provides protection in the event of:

- Phase burn-out.
- Phase reversal.
- Under / over voltage on the incoming line voltage.

### Voltage Monitoring Module as per DEWA (DVM)

Under voltage relay as per DEWA regulations. This option is available for Dubai, UAE only. **(VMM option is not required if this option is opted)**

### Ball Valve (BLV)

Ball valve can be incorporated in the liquid line.

### Fan Cycling Switch (FCS)

Fan cycling switch for single compressor units with two condenser fans. **(Not required with AMCS option)**

### Fire Alarm Interlock (VFC-F)

To provide provision for fire alarm interlock.

## Options for Field Installation

### Low Voltage Thermostat (CHTS)

For wall mounting and for cooling /heating operation with 1 or 2 stages as per model. **(Not required with AMCS option).**

- **DTS-TH – Duct Temperature Sensor for 24V Thermostat\***  
(In order to control the unit based on return/supply air duct temperature.) **(This is not required with AMCS options)**

#### Note:

- \*DTS & BMSP options are only available along with AMCS option.
- \*DTS-TH option is only available along with CHTS option.
- \*\*If CBM combined with USM option please consult SKM as component might change.
- Whenever multiple options related to unit control, please consult SKM for the drawings, as the size of the control panel might change.



## ENGINEERING SPECIFICATIONS - 50 Hz

Model		PACL	51050	51060	51070	51085	51095	52110	52120	52145
Cooling Capacity (1)	MBh		49.5	59.2	71.1	83.1	96.0	108.8	120.4	143.4
	kW		14.5	17.3	20.8	24.4	28.1	31.9	35.3	42.0
Cooling Capacity (2)	MBh		45.5	54.3	65.3	76.3	88.5	100.2	110.6	131.8
	kW		13.3	15.9	19.1	22.4	25.9	29.4	32.4	38.6
Cooling Capacity (3)	MBh		44.8	53.4	64.2	75.1	87.1	98.6	108.8	129.6
	kW		13.1	15.7	18.8	22.0	25.5	28.9	31.9	38.0
Compressor	Type	-	Hermetic Scroll							
	Quantity	-	1	1	1	1	1	2	2	2
	Oil Charge	US Gal	0.52	0.47	0.47	0.66	0.86	0.52	0.47	0.47
		Litre	2.0	1.8	1.8	2.5	3.3	2.0	1.8	1.8
Condenser Coil	Type	-	Hi-X 3/8" tubes							
	Face Area	ft <sup>2</sup>	19.4	26.7	26.7	26.7	26.7	26.7	40.0	40.0
		m <sup>2</sup>	1.8	2.5	2.5	2.5	2.5	2.5	3.7	3.7
Condenser Fan	Type	-	Propeller Direct Drive							
	Code / Quantity	-	550 / 1	550 / 2	550 / 2	550 / 2	550 / 2	550 / 2	630 / 2	630 / 2
Condenser Motor	Type	-	Totally Enclosed Air Over, Class-F insulation, 4 pole or 6 pole, IP54 protected							
Evaporator Coil	Type	-	Hi-X 3/8 Tubes							
	Face Area	ft <sup>2</sup>	4.6	4.6	6.4	6.4	8.7	9.7	9.7	12.5
		m <sup>2</sup>	0.4	0.4	0.6	0.6	0.8	0.9	0.9	1.2
Evaporator Fan	Type	-	Centrifugal DIDW Belt Drive							
	Code / Qty.	-	10/10	10/10	10/10	12/12	12/12	12/12	12/12	15/15
	Air Flow Rate	cfm	1670	2000	2400	2880	3220	4000	4000	5000
		l/s	788	944	1133	1359	1520	1888	1888	2360
Evaporator Motor	Type	-	Totally Enclosed Fan Cooled, Class-F insulation, 4-pole, IP55 Protected.							
	Size	kW	0.55	0.55	0.75	1.10	1.10	1.50	1.50	2.20
Refrigerant (R - 22) Operating Charge	lbs		6.8	8.1	8.7	13.7	15.4	15.6	21.3	22.4
	kg		3.1	3.7	3.9	6.2	7.0	7.1	9.7	10.2
Number of Refrigerant Circuits	-		1	1	1	1	1	2	2	2
Unit Operating Weight	lbs		745	833	855	997	1082	1115	1326	1404
	kg		338	379	387	452	491	506	601	636

**Notes:**

**Table 2**

- (1) Evaporator entering air conditions of 80°F/67°F (26.7°C/19.5°C) dry bulb/wet bulb and condenser entering air temperature of 95°F (35°C) dry bulb.
- (2) Evaporator entering air conditions of 80°F/67°F (26.7°C/19.5°C) dry bulb/wet bulb and condenser entering air temperature of 114.8°F(46°C) dry bulb.
- (3) Evaporator entering air conditions of 80°F/67°F (26.7°C/19.5°C) dry bulb/wet bulb and condenser entering air temperature of 118.4°F(48°C) dry bulb.

Capacity for all conditions are gross capacity which does not include the effect of evaporator fan motor heat.

**ENGINEERING SPECIFICATIONS - 50 Hz**

Model	PACL	52160	52180	52205	52225	52240	52260	52290	52330	
Cooling Capacity (1)	MBh	151.3	177.0	201.3	222.2	239.0	259.6	287.1	326.4	
	kW	44.3	51.9	59.0	65.1	70.0	76.1	84.1	95.7	
Cooling Capacity (2)	MBh	139.2	161.4	182.7	203.8	217.2	237.0	260.9	295.8	
	kW	40.8	47.3	53.6	59.7	63.7	69.5	76.5	86.7	
Cooling Capacity (3)	MBh	136.8	158.0	179.0	200.5	212.9	233.0	255.8	290.3	
	kW	40.1	46.3	52.5	58.8	62.4	68.3	75.0	85.1	
Compressor	Type	-	Hermetic Scroll							
	Quantity	-	2	2	2	2	2	2	2	2
	Oil Charge	US Gal	0.47	0.66	0.86	0.86	0.86	0.86	0.86	0.86
		Litre	1.8	2.5	3.3	3.3	3.3	3.3	3.3	3.3
Condenser Coil	Type	-	Hi-X 3/8" tubes							
	Face Area	ft <sup>2</sup>	40.0	40.0	48.0	48.0	54.7	54.7	53.3	53.3
		m <sup>2</sup>	3.7	3.7	4.5	4.5	5.1	5.1	5.0	5.0
Condenser Fan	Type	-	Propeller Direct Drive							
	Code / Quantity	-	710 / 2	710 / 2	710 / 2	710 / 2	800 / 2	800 / 2	800 / 2	800 / 2
Condenser Motor	Type	-	Totally Enclosed Air Over, Class-F insulation, 6 pole, IP54/55 protected							
Evaporator Coil	Type	-	Hi-X 3/8 Tubes							
	Face Area	ft <sup>2</sup>	13.3	13.3	15.6	15.6	19.5	19.5	21.7	21.7
		m <sup>2</sup>	1.2	1.2	1.5	1.5	1.8	1.8	2.0	2.0
Evaporator Fan	Type	-	Centrifugal DIDW Belt Drive							
	Code / Qty.	-	12/12 R2	12/12 R2	12/12 R2	12/12 R2	15/15 R2	15/15 R2	15/15 R2	15/15 R2
	Air Flow Rate	cfm	6000	6000	7000	7000	8000	8000	9100	10500
		l/s	2832	2832	3304	3304	3776	3776	4295	4956
Evaporator Motor	Type	-	Totally Enclosed Fan Cooled, Class-F insulation, 4-pole, IP55 Protected.							
	Size	kW	2.2	2.2	3.0	3.0	3.0	3.0	3.0	4.0
Refrigerant (R - 22) Operating Charge	lbs	22.9	25.9	29.6	29.6	33.4	33.4	45.6	45.6	
	kg	10.4	11.7	13.4	13.4	15.1	15.1	20.7	20.7	
Number of Refrigerant Circuits	-	2	2	2	2	2	2	2	2	
Unit Operating Weight	lbs	1543	1725	1886	1886	2181	2188	2371	2387	
	kg	700	782	855	855	989	992	1075	1084	

Table 3

**Notes:**

- (1) Evaporator entering air conditions of 80°F/67°F (26.7°C/19.5°C) dry bulb/wet bulb and condenser entering air temperature of 95°F (35°C) dry bulb.
  - (2) Evaporator entering air conditions of 80°F/67°F (26.7°C/19.5°C) dry bulb/wet bulb and condenser entering air temperature of 114.8°F(46°C) dry bulb.
  - (3) Evaporator entering air conditions of 80°F/67°F (26.7°C/19.5°C) dry bulb/wet bulb and condenser entering air temperature of 118.4°F(48°C) dry bulb.
- Capacity for all conditions are gross capacity which does not include the effect of evaporator fan motor heat.



### CAPACITY RATINGS - 50 Hz

Model PACL	AFR cfm /ls (BPF)	EWB		Condenser Entering Air Temperature																								
				95°F (35°C)			105°F (40.6°C)			114.8°F (46°C)			118.4°F (48°C)			125°F (51.7°C)												
				Total Capacity		Sensible Capacity	PI	Total Capacity		Sensible Capacity	PI	Total Capacity		Sensible Capacity	PI	Total Capacity		Sensible Capacity	PI	Total Capacity		Sensible Capacity	PI					
				MBh	kW	MBh	kW	kW	MBh	kW	MBh	kW	kW	MBh	kW	MBh	kW	kW	MBh	kW	MBh	kW	kW	MBh	kW	MBh	kW	kW
51050	1260	62	16.7	43.6	12.8	37.9	11.1	3.4	41.8	12.3	37.1	10.9	3.8	39.6	11.6	36.2	10.6	4.3	38.8	11.4	35.8	10.5	4.4	37.4	11.0	35.2	10.3	4.7
	595	67	19.4	47.2	13.8	31.5	9.2	3.5	45.4	13.3	30.8	9.0	3.9	43.6	12.8	30.1	8.8	4.4	42.9	12.6	29.8	8.7	4.6	--	--	--	--	
	0.17	72	22.2	50.9	14.9	25.0	7.3	3.6	48.9	14.3	24.3	7.1	4.1	46.9	13.8	23.6	6.9	4.6	46.2	13.5	23.4	6.9	4.7	--	--	--	--	
	1670	62	16.7	45.0	13.2	43.6	12.8	3.4	42.8	12.5	42.7	12.5	3.9	40.7	11.9	40.7	11.9	4.3	39.9	11.7	39.9	11.7	4.4	--	--	--	--	
	788	67	19.4	49.5	14.5	35.9	10.5	3.5	47.5	13.9	35.2	10.3	4.0	45.5	13.3	34.4	10.1	4.5	44.8	13.1	34.2	10.0	4.6	--	--	--	--	
	0.2	72	22.2	53.2	15.6	27.8	8.1	3.7	51.0	15.0	27.1	7.9	4.2	48.8	14.3	26.3	7.7	4.7	48.0	14.1	26.1	7.6	4.8	--	--	--	--	
	2521	62	16.7	46.6	13.6	46.6	13.6	3.5	44.5	13.0	44.5	13.0	3.9	42.4	12.4	42.4	12.4	4.3	41.7	12.2	41.7	12.2	4.5	--	--	--	--	
	1190	67	19.4	52.3	15.3	44.0	12.9	3.6	49.8	14.6	43.1	12.6	4.1	47.2	13.8	42.2	12.4	4.6	46.3	13.6	41.9	12.3	4.7	--	--	--	--	
	0.26	72	22.2	55.9	16.4	32.8	9.6	3.8	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	1260	62	16.7	--	--	--	--	--	48.3	14.2	40.0	11.7	4.2	46.1	13.5	39.0	11.4	4.7	45.3	13.3	38.6	11.3	4.9	43.8	12.8	38.0	11.1	5.3
	595	67	19.4	54.5	16.0	34.4	10.1	3.8	52.3	15.3	33.5	9.8	4.3	50.1	14.7	32.6	9.6	4.8	49.2	14.4	32.3	9.5	5.0	47.8	14.0	31.7	9.3	5.4
0.17	72	22.2	59.0	17.3	27.9	8.2	3.8	56.8	16.6	27.1	7.9	4.4	54.4	15.9	26.2	7.7	5.0	53.5	15.7	25.9	7.6	5.2	52.0	15.2	25.4	7.4	5.6	
2000	62	16.7	54.5	16.0	51.4	15.1	3.8	52.2	15.3	50.5	14.8	4.3	49.2	14.4	49.2	14.4	4.8	48.1	14.1	48.1	14.1	5.0	46.2	13.5	46.2	13.5	5.3	
944	67	19.4	59.2	17.3	42.2	12.4	3.9	56.8	16.7	41.4	12.1	4.4	54.3	15.9	40.5	11.9	5.0	53.4	15.7	40.1	11.8	5.2	51.8	15.2	39.5	11.6	5.6	
0.22	72	22.2	64.0	18.7	32.9	9.6	3.9	61.4	18.0	32.1	9.4	4.5	58.7	17.2	31.2	9.1	5.2	57.8	16.9	30.9	9.0	5.5	56.0	16.4	30.3	8.9	5.9	
2521	62	16.7	55.9	16.4	55.9	16.4	3.8	53.0	15.5	53.0	15.5	4.3	50.0	14.7	50.0	14.7	4.8	49.0	14.4	49.0	14.4	5.0	47.2	13.8	47.2	13.8	5.4	
1190	67	19.4	61.2	17.9	47.1	13.8	3.9	58.7	17.2	46.2	13.6	4.4	56.1	16.4	45.3	13.3	5.1	55.2	16.2	45.0	13.2	5.3	53.5	15.7	44.4	13.0	5.7	
0.26	72	22.2	65.9	19.3	35.9	10.5	4.0	63.2	18.5	35.1	10.3	4.6	60.4	17.7	34.2	10.0	5.3	59.4	17.4	33.9	9.9	5.6	57.6	16.9	33.3	9.8	6.0	
1769	62	16.7	62.5	18.3	53.8	15.8	4.6	59.8	17.5	52.6	15.4	5.2	56.7	16.6	51.2	15.0	5.8	55.5	16.3	50.7	14.9	6.1	53.3	15.6	49.8	14.6	6.4	
835	67	19.4	67.6	19.8	44.7	13.1	4.8	64.9	19.0	43.7	12.8	5.4	62.1	18.2	42.6	12.5	6.0	61.1	17.9	42.2	12.4	6.2	59.4	17.4	41.6	12.2	6.6	
0.17	72	22.2	72.9	21.4	35.6	10.4	4.9	70.0	20.5	34.6	10.1	5.5	67.1	19.7	33.6	9.8	6.1	66.0	19.3	33.2	9.7	6.3	--	--	--	--		
2400	62	16.7	64.9	19.0	62.6	18.3	4.7	61.5	18.0	61.2	17.9	5.3	58.3	17.1	58.3	17.1	5.9	57.1	16.7	57.1	16.7	6.1	55.1	16.2	55.1	16.2	6.5	
1133	67	19.4	71.1	20.8	51.5	15.1	4.8	68.2	20.0	50.4	14.8	5.4	65.3	19.1	49.3	14.5	6.1	64.2	18.8	48.9	14.3	6.3	--	--	--	--		
0.2	72	22.2	76.5	22.4	39.8	11.7	4.9	73.3	21.5	38.8	11.4	5.6	70.1	20.5	37.8	11.1	6.3	68.9	20.2	37.4	11.0	6.5	--	--	--	--		
3538	62	16.7	66.9	19.6	66.9	19.6	4.7	63.7	18.7	63.7	18.7	5.3	60.6	17.8	60.6	17.8	5.9	59.5	17.4	59.5	17.4	6.1	57.5	16.9	57.5	16.9	6.5	
1670	67	19.4	74.9	21.9	62.3	18.3	4.9	71.7	21.0	61.2	17.9	5.5	67.8	19.9	59.8	17.5	6.2	66.5	19.5	59.4	17.4	6.4	--	--	--	--		
0.26	72	22.2	80.1	23.5	46.5	13.6	4.9	76.6	22.4	45.5	13.3	5.7	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	
1769	62	16.7	--	--	--	--	--	67.8	19.9	56.1	16.4	6.2	64.5	18.9	54.6	16.0	7.1	63.3	18.6	54.1	15.9	7.4	61.1	17.9	53.1	15.6	7.9	
835	67	19.4	76.4	22.4	48.3	14.1	5.5	73.2	21.5	47.0	13.8	6.3	70.0	20.5	45.7	13.4	7.2	68.8	20.2	45.2	13.3	7.5	66.7	19.6	44.4	13.0	8.0	
0.17	72	22.2	82.5	24.2	39.0	11.4	5.6	79.3	23.3	37.9	11.1	6.4	76.1	22.3	36.7	10.8	7.3	74.9	21.9	36.3	10.6	7.6	72.7	21.3	35.5	10.4	8.1	
2880	62	16.7	76.6	22.5	73.1	21.4	5.5	73.1	21.4	71.7	21.0	6.3	68.8	20.2	68.8	20.2	7.1	67.3	19.7	67.3	19.7	7.4	64.6	18.9	64.6	18.9	8.0	
1359	67	19.4	83.1	24.4	59.9	17.5	5.7	79.8	23.4	58.7	17.2	6.4	76.3	22.4	57.4	16.8	7.3	75.1	22.0	56.9	16.7	7.6	72.8	21.3	56.1	16.5	8.1	
0.23	72	22.2	89.8	26.3	46.5	13.6	5.8	86.3	25.3	45.4	13.3	6.6	82.6	24.2	44.2	13.0	7.4	81.2	23.8	43.7	12.8	7.7	78.7	23.1	42.9	12.6	8.2	
3538	62	16.7	78.2	22.9	78.2	22.9	5.6	74.1	21.7	74.1	21.7	6.3	69.9	20.5	69.9	20.5	7.2	68.4	20.1	68.4	20.1	7.5	65.9	19.3	65.9	19.3	8.0	
1670	67	19.4	85.5	25.1	66.0	19.3	5.7	82.1	24.1	64.8	19.0	6.5	78.5	23.0	63.6	18.6	7.3	77.2	22.6	63.1	18.5	7.6	74.9	21.9	62.3	18.3	8.1	
0.26	72	22.2	92.4	27.1	50.4	14.6	5.9	88.6	26.0	49.2	14.4	6.6	84.8	24.8	48.0	14.1	7.5	83.3	24.4	47.6	13.9	7.7	80.7	23.7	46.7	13.7	8.2	
2387	62	16.7	84.4	24.7	72.6	21.3	6.4	81.1	23.8	71.1	20.8	7.2	77.3	22.7	69.5	20.4	8.1	75.8	22.2	68.8	20.2	8.5	73.0	21.4	67.6	19.8	9.0	
1127	67	19.4	91.3	26.8	60.4	17.7	6.6	87.9	25.8	59.1	17.3	7.5	84.4	24.7	57.7	16.9	8.5	83.1	24.4	57.2	16.8	8.8	80.7	23.7	56.3	16.5	9.5	
0.17	72	22.2	98.5	28.9	48.1	14.1	6.7	94.8	27.8	46.8	13.7	7.8	90.9	26.6	45.5	13.3	9.0	89.4	26.2	45.0	13.2	9.4	86.7	25.4	44.0	12.9	10.1	
3220	62	16.7	87.7	25.7	84.2	24.7	6.5	83.5	24.5	82.5	24.2	7.3	79.3	23.3	79.3	23.3	8.2	77.9	22.8	77.9	22.8	8.5	75.2	22.0	75.2	22.0	9.1	
1520	67	19.4	96.0	28.1	69.3	20.3	6.7	92.3	27.1	67.9	19.9	7.6	88.5	25.9	66.6	19.5	8.7	87.1	25.5	66.0	19.4	9.2	84.5	24.8	65.1	19.1	9.8	
0.2	72	22.2	103.3	30.3	53.7	15.7	6.9	99.1	29.0	52.3	15.3	8.0	94.6	27.7	50.9	14.9	9.4	93.0	27.3	50.3	14.8	9.9	90.0	26.4	49.4	14.5	10.7	
4774	62	16.7	90.4	26.5	90.4	26.5	6.5	86.4	25.3	86.4	25.3	7.4	82.5	24.2	82.5	24.2	8.3	81.0	23.7	81.0	23.7	8.7	78.4	23.0	78.4	23.0	9.3	
2253	67	19.4	101.2	29.7	84.1	24.6	6.8	97.1	28.4	82.6	24.2	7.9	92.0															

## CAPACITY RATINGS - 50 Hz

Model PACL	AFR cfm /fs (BPF)	EWB °F °C		Condenser Entering Air Temperature																									
				95°F (35°C)			105°F (40.6°C)			114.8°F (46°C)			118.4°F (48°C)			125°F (51.7°C)													
				Total Capacity		Sensible Capacity		PI	Total Capacity		Sensible Capacity		PI	Total Capacity		Sensible Capacity		PI	Total Capacity		Sensible Capacity		PI	Total Capacity		Sensible Capacity		PI	
				MBh	kW	MBh	kW	kW	MBh	kW	MBh	kW	kW	MBh	kW	MBh	kW	kW	MBh	kW	MBh	kW	kW	MBh	kW	MBh	kW	kW	
52160	3667	62	16.7	129.3	37.9	111.3	32.6	8.7	124.0	36.3	109.0	31.9	9.8	117.8	34.5	106.3	31.1	11.1	115.2	33.8	105.2	30.8	11.5	110.7	32.4	103.3	30.3	12.3	
	1731	67	19.4	139.9	41.0	92.6	27.1	8.9	134.6	39.4	90.6	26.5	10.1	129.0	37.8	88.4	25.9	11.3	126.9	37.2	87.6	25.7	11.7	123.2	36.1	86.2	25.3	12.5	
	0.17	72	22.2	151.0	44.3	73.8	21.6	9.1	145.3	42.6	71.8	21.0	10.2	139.4	40.8	69.7	20.4	11.5	137.1	40.2	69.0	20.2	12.0	133.1	39.0	67.6	19.8	12.8	
	6000	62	16.7	138.4	39.9	138.4	39.9	8.8	129.8	38.0	129.8	38.0	10.0	123.4	36.2	123.4	36.2	11.2	121.0	35.5	121.0	35.5	11.6	116.9	34.3	116.9	34.3	12.4	
	2832	67	19.4	151.3	44.3	116.8	34.2	9.1	145.4	42.6	114.7	33.6	10.2	139.2	40.8	112.5	33.0	11.5	136.8	40.1	111.6	32.7	12.0	131.8	38.6	109.9	32.2	12.8	
	0.23	72	22.2	162.4	47.6	88.9	26.1	9.1	155.9	45.7	86.8	25.4	10.3	149.0	43.7	84.7	24.8	11.8	146.5	42.9	83.9	24.6	12.3	--	--	--	--	--	
	7333	62	16.7	138.4	40.6	138.4	40.6	8.9	132.2	38.8	132.2	38.8	10.0	125.9	36.9	125.9	36.9	11.2	123.5	36.2	123.5	36.2	11.6	119.4	35.0	119.4	35.0	12.4	
	3461	67	19.4	155.1	45.5	129.0	37.8	9.1	148.9	43.6	126.9	37.2	10.3	141.1	41.3	124.2	36.4	11.5	138.2	40.5	123.2	36.1	12.0	133.3	39.1	121.5	35.6	12.8	
	0.26	72	22.2	166.0	48.7	96.5	28.3	9.1	169.2	46.7	94.4	27.7	10.3	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	3667	62	16.7	148.1	43.4	124.6	36.5	11.3	141.5	41.5	121.6	36.6	12.9	139.9	39.2	118.2	34.6	14.6	130.7	38.3	116.8	34.2	15.2	125.3	36.7	114.4	33.5	16.3	
52180	1731	67	19.4	160.2	46.9	104.3	30.6	11.6	153.6	45.0	101.7	29.8	13.2	146.9	43.1	99.0	29.0	14.9	144.4	42.3	98.0	28.7	15.5	140.1	41.1	96.2	28.2	16.5	
	0.09	72	22.2	173.2	50.8	83.9	24.6	11.9	166.2	48.7	81.4	23.8	13.5	159.2	46.7	78.9	23.1	15.1	156.6	45.9	77.9	22.8	15.7	151.8	44.5	76.3	22.4	16.7	
	6000	62	16.7	158.2	46.4	158.2	46.4	11.5	150.4	44.1	150.4	44.1	13.1	142.6	41.8	142.6	41.8	14.8	139.8	41.0	139.8	41.0	15.4	134.9	39.5	134.9	39.5	16.4	
	2832	67	19.4	177.0	51.9	133.3	39.1	12.0	169.6	49.7	130.6	38.3	13.6	161.4	47.3	127.6	37.4	15.2	158.0	46.3	126.3	37.0	15.7	151.9	44.5	124.2	36.4	16.7	
	0.13	72	22.2	190.4	55.8	102.4	30.0	12.4	182.2	53.4	99.7	29.2	14.0	173.9	51.0	97.0	28.4	15.6	--	--	--	--	--	--	--	--	--	--	--
	7333	62	16.7	161.8	47.4	161.8	47.4	11.6	154.1	45.2	154.1	45.2	13.2	146.4	42.9	146.4	42.9	14.9	143.6	42.1	143.6	42.1	15.4	138.7	40.6	138.7	40.6	16.4	
	3461	67	19.4	182.4	53.5	148.1	43.4	12.1	172.9	50.7	144.7	42.4	13.7	163.6	48.0	141.4	41.5	15.2	160.3	47.0	140.3	41.1	15.8	154.4	45.3	138.2	40.5	16.7	
	0.14	72	22.2	195.9	57.4	111.6	32.7	12.5	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
	4278	62	16.7	169.1	49.6	143.6	42.1	13.0	162.3	47.6	140.6	41.2	14.7	154.2	45.2	137.0	40.2	16.5	151.1	44.3	136.6	39.8	17.1	145.6	42.7	133.2	39.0	18.2	
	52205	2019	67	19.4	182.9	53.6	120.1	35.2	13.3	176.0	51.6	117.3	34.4	15.1	169.0	49.5	114.5	33.6	17.2	166.4	48.8	113.4	33.3	17.9	161.6	47.4	111.5	32.7	19.2
0.09		72	22.2	197.3	57.8	96.1	28.2	13.7	189.7	55.6	93.4	27.4	15.8	181.8	53.3	90.6	26.6	18.3	178.8	52.4	89.5	26.2	19.1	173.3	50.8	87.6	25.7	20.6	
7000		62	16.7	179.9	52.7	179.9	52.7	13.2	171.9	50.4	171.9	50.4	15.0	164.0	48.1	164.0	48.1	16.9	161.1	47.2	161.1	47.2	17.6	155.9	45.7	155.9	45.7	18.7	
3304		67	19.4	201.3	59.0	153.6	45.0	13.8	192.9	56.6	150.6	44.1	16.0	182.7	53.6	146.9	43.0	18.4	179.0	52.5	145.5	42.7	19.2	172.5	50.6	143.2	42.0	20.5	
0.13		72	22.2	215.3	63.1	117.4	34.4	14.3	205.6	60.3	114.1	33.4	17.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
8556		62	16.7	184.1	53.9	184.1	53.9	13.3	176.1	51.6	176.1	51.6	15.1	168.1	49.3	168.1	49.3	17.1	165.1	48.4	165.1	48.4	17.8	159.8	46.8	159.8	46.8	19.0	
4038		67	19.4	205.6	60.3	170.2	49.9	14.0	195.3	57.2	166.6	48.8	16.2	185.1	54.3	163.0	47.8	18.7	181.4	53.2	161.7	47.4	19.5	175.0	51.3	159.5	46.7	20.9	
0.14		72	22.2	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--	--
4278		62	16.7	186.6	54.7	151.7	44.5	15.6	178.7	52.4	148.0	43.4	18.0	170.6	50.0	144.3	42.3	20.3	167.6	49.1	143.0	41.9	21.2	162.3	47.6	140.6	41.2	22.6	
52225		2019	67	19.4	200.8	58.8	127.5	37.4	16.0	192.8	56.5	124.2	36.4	18.4	184.6	54.1	120.8	35.4	20.8	181.7	53.3	119.6	35.1	21.6	--	--	--	--	--
	0.09	72	22.2	216.7	63.5	103.3	30.3	16.4	208.1	61.0	100.1	29.3	18.9	199.5	58.5	96.9	28.4	21.2	196.5	57.6	95.8	28.1	22.0	--	--	--	--	--	
	7000	62	16.7	202.4	59.3	195.9	57.4	16.0	192.0	56.3	191.6	56.2	18.3	181.9	53.3	181.9	53.3	20.7	178.4	52.3	178.4	52.3	21.5	172.3	50.5	172.3	50.5	22.8	
	3304	67	19.4	222.2	65.1	161.5	47.3	16.6	212.9	62.4	158.0	46.3	19.0	203.8	59.7	154.5	45.3	21.4	200.5	58.8	153.3	44.9	22.1	--	--	--	--	--	
	0.13	72	22.2	238.5	69.9	124.9	36.6	17.1	228.5	67.0	121.5	36.6	19.5	218.6	64.1	118.3	34.7	21.8	215.2	63.1	117.2	34.4	22.5	--	--	--	--	--	
	8556	62	16.7	206.0	60.4	206.0	60.4	16.1	195.9	57.4	195.9	57.4	18.5	186.1	54.6	186.1	54.6	20.8	182.7	53.5	182.7	53.5	21.6	--	--	--	--	--	
	4038	67	19.4	229.1	67.1	178.6	52.3	16.8	219.4	64.3	175.1	51.3	19.2	209.1	61.3	171.4	50.2	21.5	205.0	60.1	170.0	49.8	22.3	--	--	--	--	--	
	0.14	72	22.2	245.1	71.8	135.6	39.7	17.3	234.7	68.8	132.2	38.8	19.7	224.6	65.8	129.0	37.8	21.9	--	--	--	--	--	--	--	--	--	--	--
	5363	62	16.7	204.3	59.9	176.6	51.8	15.0	194.7	57.1	172.3	50.5	17.1	184.1	54.0	167.7	49.1	19.5	180.3	52.8	166.0	48.7	20.3	173.7	50.9	163.2	47.8	21.8	
	52240	2531	67	19.4	221.2	64.8	147.3	43.2	15.3	212.6	62.3	143.8	42.2	17.6	203.6	59.7	140.3	41.1	20.0	200.4	58.7	139.0	40.7	20.9	194.5	57.0	136.7	40.1	22.3
0.09		72	22.2	238.3	69.8	117.3	34.4	15.7	229.0	67.1	114.0	33.4	18.0	219.3	64.3	110.6	32.4	20.4	215.8	63.2	109.3	32.0	21.3	209.5	61.4	107.2	31.4	22.7	
8000		62	16.7	213.8	62.7	213.8	62.7	15.2	204.1	59.8	204.1	59.8	17.4	194.2	56.9	194.2	56.9	19.7	190.6	55.9	190.6	55.9	20.6	184.3	54.0	184.3	54.0	22.1	
3776		67	19.4	239.0	70.0	180.1	52.8	15.7	229.2	67.2	176.4	51.7	18.0	217.2	63.7	172.1	50.4	20.4	212.9	62.4	170.5	50.0	21.2	205.5	60.2	167.8	49.2	22.6	
0.12		72	22.2	255.6	74.9	137.8	40.4	16.2																					



## FAN PERFORMANCE WITH 1” FILTER

Model PACL	AirFlowRate		Internal Static Pressure		External Static Pressure - in.wg (Pa)														RPM Range 50 Hz
					0.2 (50)		0.4 (100)		0.5 (125)		0.6 (150)		0.8 (200)		1 (250)		1.25 (313)		
	cfm	l/s	in.wg	Pa	RPM	kW	RPM	kW	RPM	kW	RPM	kW	RPM	kW	RPM	kW	RPM	kW	
51050	1260	595	0.24	59.69	606	0.12	726	0.16	784	0.18	841	0.21	-	-	-	-	-	-	770 to 993
	1670	788	0.41	101	723	0.24	819	0.29	865	0.31	910	0.34	999	0.4	1085	0.46	1192	0.55	
	2521	1190	0.96	239.22	1017	0.73	1085	0.81	1118	0.84	1150	0.88	1213	0.96	1275	1.04	1350	1.14	
51060	1260	595	0.24	59.69	606	0.12	726	0.16	784	0.18	841	0.21	-	-	-	-	-	-	809 to 1043
	2000	944	0.59	147.23	833	0.38	916	0.44	956	0.47	995	0.51	1071	0.57	1145	0.64	1237	0.73	
	2521	1190	0.96	239.22	1017	0.73	1085	0.81	1118	0.84	1150	0.88	1213	0.96	1275	1.04	1350	1.14	
51070	1769	835	0.24	59.71	646	0.22	747	0.27	794	0.3	839	0.32	926	0.38	1011	0.44	1114	0.52	
	2400	1133	0.43	106.01	803	0.48	883	0.55	922	0.58	959	0.62	1031	0.69	1099	0.77	1181	0.86	
	3538	1670	0.96	239.14	1130	1.43	1184	1.53	1212	1.58	1239	1.63	1293	1.73	1345	1.84	1409	1.97	
51085	1769	835	0.24	59.71	-	-	643	0.23	690	0.26	735	0.29	823	0.36	908	0.44	-	-	739 to 922
	2880	1359	0.62	155.41	764	0.6	835	0.69	868	0.73	901	0.78	964	0.87	1025	0.96	1098	1.08	
	3538	1670	0.96	239.14	913	1.06	973	1.17	1001	1.23	1029	1.28	1084	1.39	1136	1.5	1200	1.64	
51095	2387	1126	0.24	59.71	-	-	665	0.37	707	0.4	746	0.44	822	0.52	894	0.6	979	0.7	695 to 866
	3220	1520	0.42	104.78	713	0.63	784	0.73	818	0.78	851	0.83	915	0.93	976	1.03	1048	1.16	
	4774	2253	0.96	239.15	1006	1.9	1055	2.05	1080	2.12	1104	2.2	1152	2.34	1198	2.49	1255	2.68	
52110	2674	1262	0.24	59.73	-	-	681	0.45	721	0.49	759	0.53	831	0.62	899	0.7	980	0.81	793 to 989
	4000	1888	0.52	130.04	816	1.07	875	1.18	904	1.25	933	1.31	989	1.43	1043	1.56	1108	1.71	
	5347	2523	0.96	239.16	1062	2.45	1106	2.6	1128	2.68	1150	2.76	1194	2.92	1237	3.09	1290	3.3	
52120	2674	1262	0.24	59.73	-	-	681	0.45	721	0.49	759	0.53	831	0.62	899	0.7	980	0.81	
	4000	1888	0.52	130.04	816	1.07	875	1.18	904	1.25	933	1.31	989	1.43	1043	1.56	1108	1.71	
	5347	2523	0.96	239.16	1062	2.45	1106	2.6	1128	2.68	1150	2.76	1194	2.92	1237	3.09	1290	3.3	
52145	3438	1622	0.24	59.73	481	0.4	556	0.5	591	0.55	624	0.6	686	0.71	745	0.83	816	0.98	622 to 775
	5000	2360	0.49	122.56	632	1.07	689	1.21	716	1.28	743	1.35	793	1.49	842	1.64	899	1.83	
	6875	3244	0.96	239.18	838	2.66	881	2.84	901	2.93	922	3.03	962	3.22	1001	3.41	1048	3.65	
52160	3667	1730	0.21	52.72	-	-	662	0.5	711	0.57	758	0.64	849	0.78	937	0.95	1044	1.19	793 to 989
	6000	2831	0.56	140.61	787	1.32	861	1.52	897	1.62	931	1.72	997	1.93	1061	2.13	1137	2.39	
	7333	3460	0.87	215.63	938	2.32	1000	2.56	1030	2.69	1060	2.81	1117	3.06	1173	3.3	1239	3.61	
52180	3667	1730	0.25	62.7	-	-	682	0.53	730	0.6	777	0.66	867	0.81	954	0.98	1061	1.23	
	6000	2831	0.68	168.31	829	1.43	901	1.63	935	1.73	968	1.84	1033	2.04	1095	2.25	1170	2.51	
	7333	3460	1.04	259.16	992	2.53	1053	2.78	1082	2.9	1110	3.02	1166	3.27	1220	3.52	1285	3.83	
52205	4278	2019	0.25	62.7	-	-	692	0.67	737	0.74	781	0.81	864	0.97	943	1.13	1038	1.36	796 to 989
	7000	3303	0.68	168.31	863	1.9	930	2.14	962	2.26	993	2.37	1054	2.61	1113	2.84	1183	3.14	
	8556	4038	1.04	259.22	1035	3.38	1091	3.67	1118	3.81	1145	3.95	1197	4.24	1248	4.53	1309	4.89	
52225	4278	2019	0.25	62.7	-	-	692	0.67	737	0.74	781	0.81	864	0.97	943	1.13	1038	1.36	
	7000	3303	0.68	168.31	863	1.9	930	2.14	962	2.26	993	2.37	1054	2.61	1113	2.84	1183	3.14	
	8556	4038	1.04	259.22	1035	3.38	1091	3.67	1118	3.81	1145	3.95	1197	4.24	1248	4.53	1309	4.89	
52240	5363	2531	0.25	62.7	484	0.56	570	0.75	609	0.84	648	0.94	721	1.16	792	1.41	878	1.75	624 to 778
	8000	3775	0.55	137.75	642	1.55	707	1.81	737	1.94	767	2.07	823	2.34	878	2.62	943	2.99	
	10725	5061	1.04	259.19	832	3.56	882	3.89	907	4.06	930	4.23	976	4.57	1021	4.92	1074	5.38	
52260	5363	2531	0.25	62.7	484	0.56	570	0.75	609	0.84	648	0.94	721	1.16	792	1.41	878	1.75	
	8000	3775	0.55	137.75	642	1.55	707	1.81	737	1.94	767	2.07	823	2.34	878	2.62	943	2.99	
	10725	5061	1.04	259.19	832	3.56	882	3.89	907	4.06	930	4.23	976	4.57	1021	4.92	-	-	
52290	5958	2812	0.25	62.69	493	0.67	576	0.87	614	0.97	650	1.07	720	1.3	786	1.54	866	1.87	700 to 872
	9100	4294	0.58	144.92	672	2.02	733	2.3	762	2.44	790	2.58	843	2.88	895	3.18	956	3.57	
	11917	5624	1.04	259.2	856	4.36	904	4.71	927	4.9	-	-	-	-	-	-	-		
52330	5958	2812	0.25	62.69	493	0.67	576	0.87	614	0.97	650	1.07	720	1.3	786	1.54	866	1.87	750 to 935
	10500	4955	0.79	197.64	762	3.03	816	3.34	842	3.51	867	3.67	916	4	963	4.34	1019	4.77	
	11917	5624	1.04	259.2	856	4.36	904	4.71	927	4.9	-	-	-	-	-	-	-		

Table 6

**Notes:**

1. Areas shaded in blue indicate factory setting of rpm.
2. Areas shaded in grey indicate operating range outside the standard motor. Shift to larger motor size in this area.
3. Internal static pressure is based on pressure drops through evaporator coil, fan casing and 1” flat filter.
4. The shown rpm range is with standard pulleys combination.

## ELECTRICAL DATA

**Power Supply: 380~415V/3Ph/50Hz**

Model PACL	Unit Characteristic			Compressor			Condenser Fan Motor			Evaporator Fan Motor	
	MFA	MCA	ICF	QTY	RLA	LRA	QTY	FLA	LRA	FLA	LRA
51050	25	13	66	1	8	62	1	0.9	2.6	1.4	7.3
51060	32	16	79	1	10	74	2	0.9	2.6	1.4	7.3
51070	32	19	106	1	12	101	2	0.9	2.6	1.9	9.7
51085	40	25	101	1	16	95	2	0.9	2.6	2.6	14.8
51095	50	26	117	1	17	111	2	0.9	2.6	2.6	14.8
52110	40	28	83	2	10	66	2	0.9	2.6	3.4	18.8
52120	40	29	92	2	10	74	2	1.2	3.6	3.4	18.8
52145	50	35	123	2	12	101	2	1.2	3.6	4.8	27.1
52160	50	37	129	2	12	101	2	2.2	9.0	4.8	27.1
52180	63	46	127	2	16	95	2	2.2	9.0	4.8	27.1
52205	80	50	146	2	17	111	2	2.2	9.0	6.6	42.6
52225	80	54	155	2	19	118	2	2.2	9.0	6.6	42.6
52240	80	58	164	2	19	118	2	4.0	16.5	6.6	42.6
52260	100	65	167	2	22	118	2	4.0	16.5	6.6	42.6
52290	100	71	192	2	25	140	2	4.0	16.5	6.6	42.6
52330	125	85	233	2	30	174	2	4.0	16.5	8.6	53.6

Table 7

**Power Supply: 440V/3Ph/50Hz**

Model PACL	Unit Characteristic			Compressor			Condenser Fan Motor			Evaporator Fan Motor	
	MFA	MCA	ICF	QTY	RLA	LRA	QTY	FLA	LRA	FLA	LRA
51050	25	13	66	1	8	62	1	0.9	2.6	1.3	6.7
51060	32	16	79	1	10	74	2	0.9	2.6	1.3	6.7
51070	32	19	106	1	12	101	2	0.9	2.6	1.7	8.8
51085	40	25	101	1	16	95	2	0.9	2.6	2.3	13.5
51095	50	26	117	1	17	111	2	0.9	2.6	2.3	13.5
52110	40	28	83	2	10	66	2	0.9	2.6	3.1	17.0
52120	40	28	92	2	10	74	2	1.2	3.6	3.1	17.0
52145	50	34	122	2	12	101	2	1.2	3.6	4.4	24.6
52160	50	37	129	2	12	101	2	2.5	8.8	4.4	24.6
52180	63	46	127	2	16	95	2	2.5	8.8	4.4	24.6
52205	80	50	145	2	17	111	2	2.5	8.8	6.0	38.8
52225	80	54	154	2	19	118	2	2.5	8.8	6.0	38.8
52240	80	57	161	2	19	118	2	3.7	14.0	6.0	38.8
52260	100	63	164	2	22	118	2	3.7	14.0	6.0	38.8
52290	100	70	189	2	25	140	2	3.7	14.0	6.0	38.8
52330	125	83	230	2	30	174	2	3.7	14.0	7.9	48.7

Table 8

### Legend

**MFA** Maximum Fuse Amps (for fuse / circuit breaker sizing), complies with NEC Article 440-22 & 430-52.

**MCA** Minimum Circuit Amps.(for wire sizing), complies with NEC article 440-33.

**ICF** Maximum Instantaneous Current Flow

### Note :

Voltage imbalance not to exceed  $\pm 2\%$  of the rated voltage

**RLA** Rated Load Amps. (at worst operating condition)

**LRA** Locked Rotor Amps

**FLA** Full Load Amps



## Field Connections

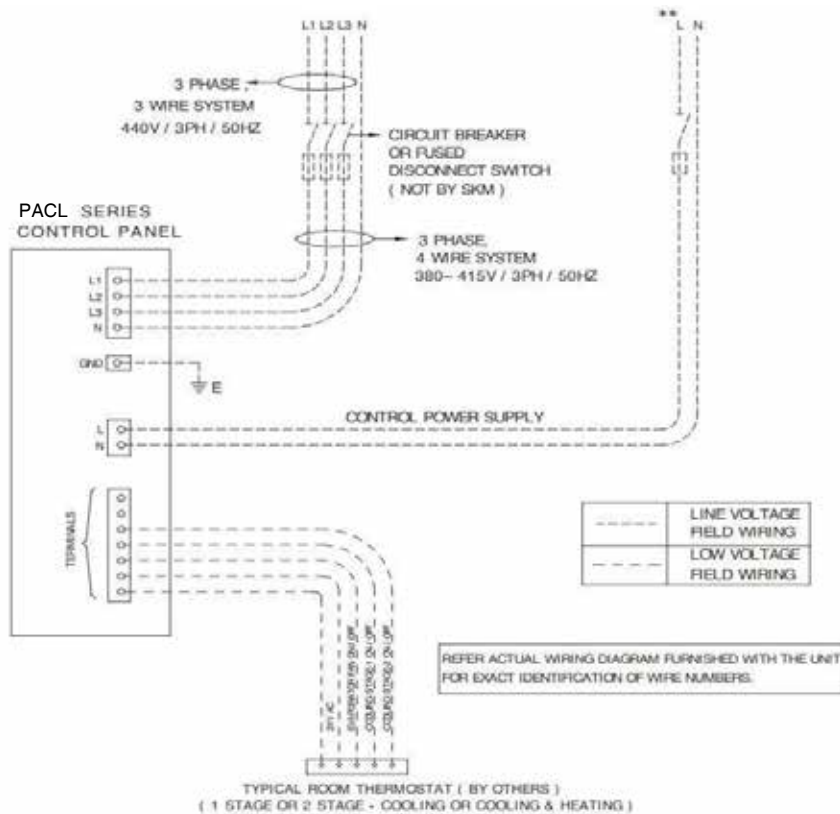
**PACL** series self-contained heavy duty air cooled packaged units are designed for minimum field interaction. Power hook ups and control wiring of room thermostat as per field wiring diagram is all that is required to electrically connect any model of **PACL** series. Every **PACL** series packaged air conditioning unit requires, at most, field installed fused disconnect switches or circuit breakers and room thermostat.

Refer below for schematic representation of required field electrical hook-ups for a standard **PACL** series packaged air conditioning unit. All field wiring must be done in accordance with applicable local & national codes.

For the maximum fuse ampere for fuse sizing & minimum circuit amps for cable sizing, see page 12.

The **PACL** series is then ready to provide cooling, on demand.

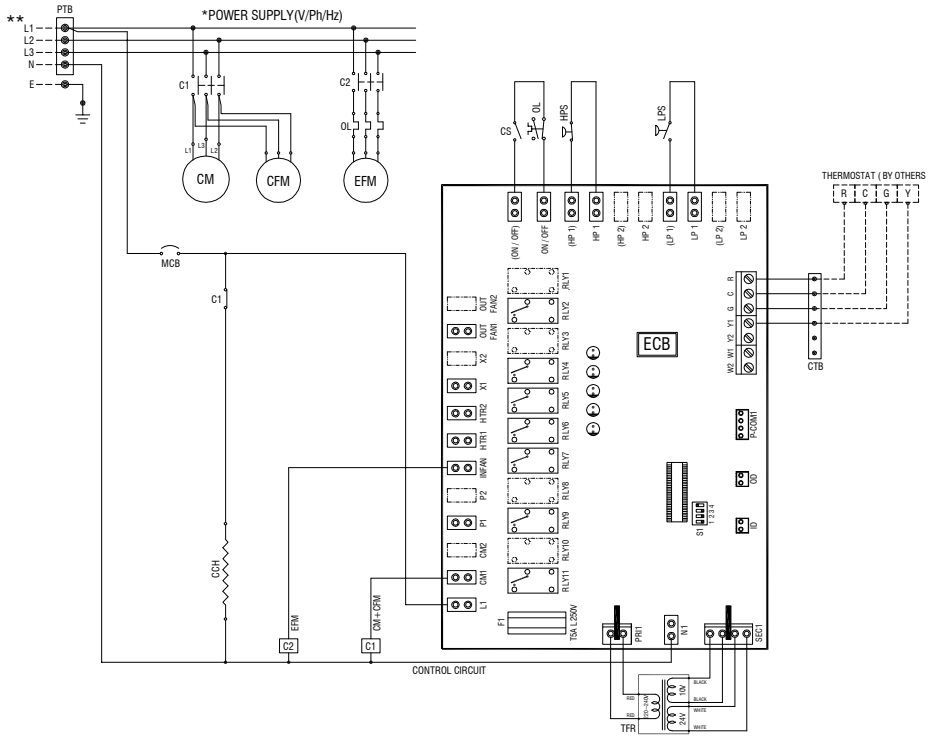
## Field Wiring Requirement Schematic



\*\*The **PACL** series units rated for 440V/3Ph/50Hz or power supplies with out neutral require separate source of control power supply through field supplied and installed 15A/220V fused control disconnect switch or order with factory buit in option 'CXT'.

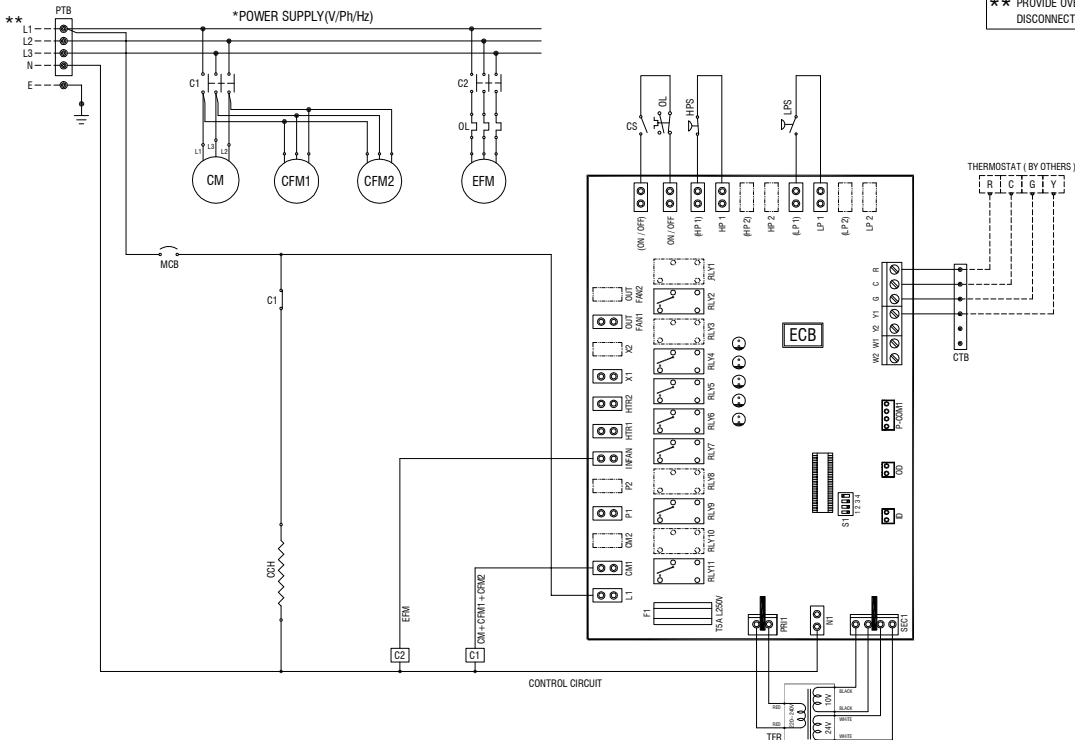
## Typical Wiring Diagram

PACL Models: 51050



LEGEND	
----	FIELD WIRING & FIELD SUPPLIED DEVICES
LPS	LOW PRESSURE SWITCH
HPS	HIGH PRESSURE SWITCH
CS	CONTROL SWITCH
CCH	CRANK CASE HEATER
MCB	MINIATURE CIRCUIT BREAKER
EFM	EVAPORATOR FAN MOTOR
OL	OVERLOAD RELAY
CFM	CONDENSER FAN MOTOR
CM	COMPRESSOR MOTOR
C	CONTACTOR
ECB	ELECTRONIC CONTROL BOARD
PTB	POWER TERMINAL BLOCK
CTB	CONTROL TERMINAL BLOCK
TFR	TRANSFORMER

PACL Models: 51060, 51070, 51085 & 51095

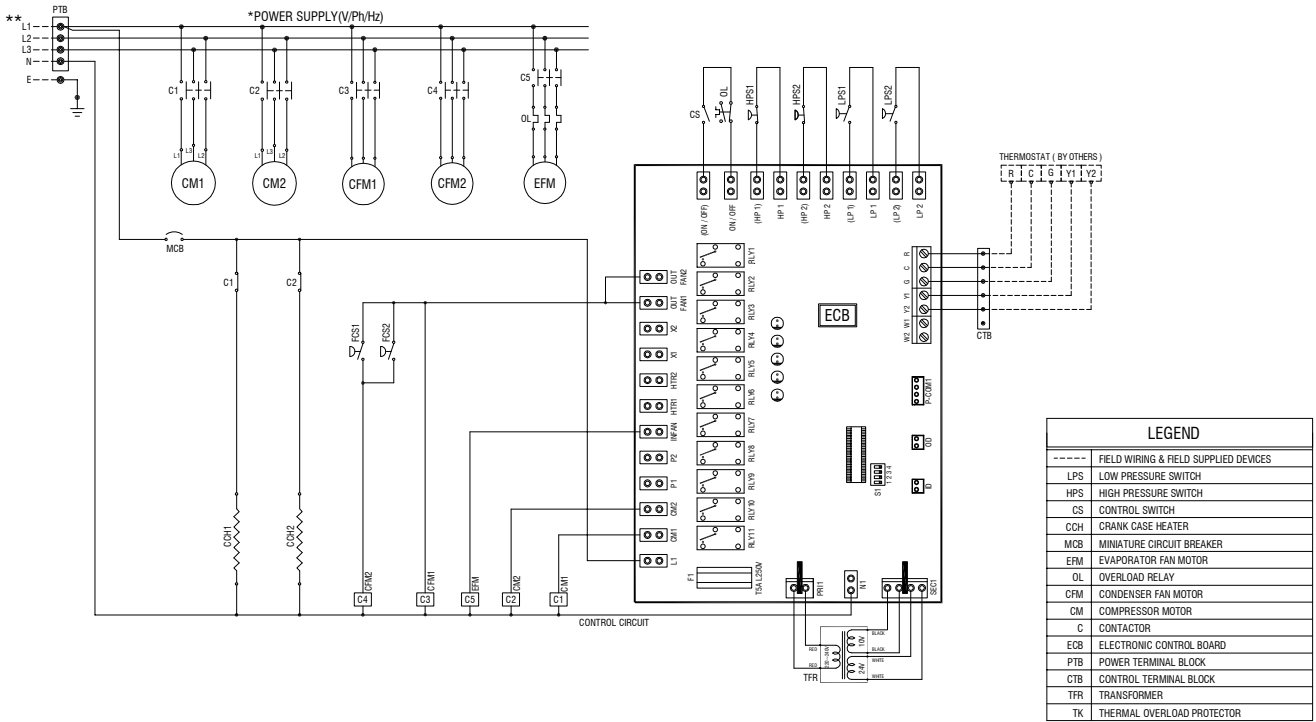


**NOTE**  
 \* TYPICAL WIRING DIAGRAM SHOWN IS SUITABLE FOR 380-415V/3Ph/50Hz ONLY, FOR 440V/3Ph/50Hz PLEASE CONSULT SKM  
 \*\* PROVIDE OVERCURRENT, EARTH FAULT PROTECTION, SHORT CIRCUIT AND DISCONNECT MEANS AS REQUIRED BY LOCAL & NATIONAL ELECTRIC CODE.



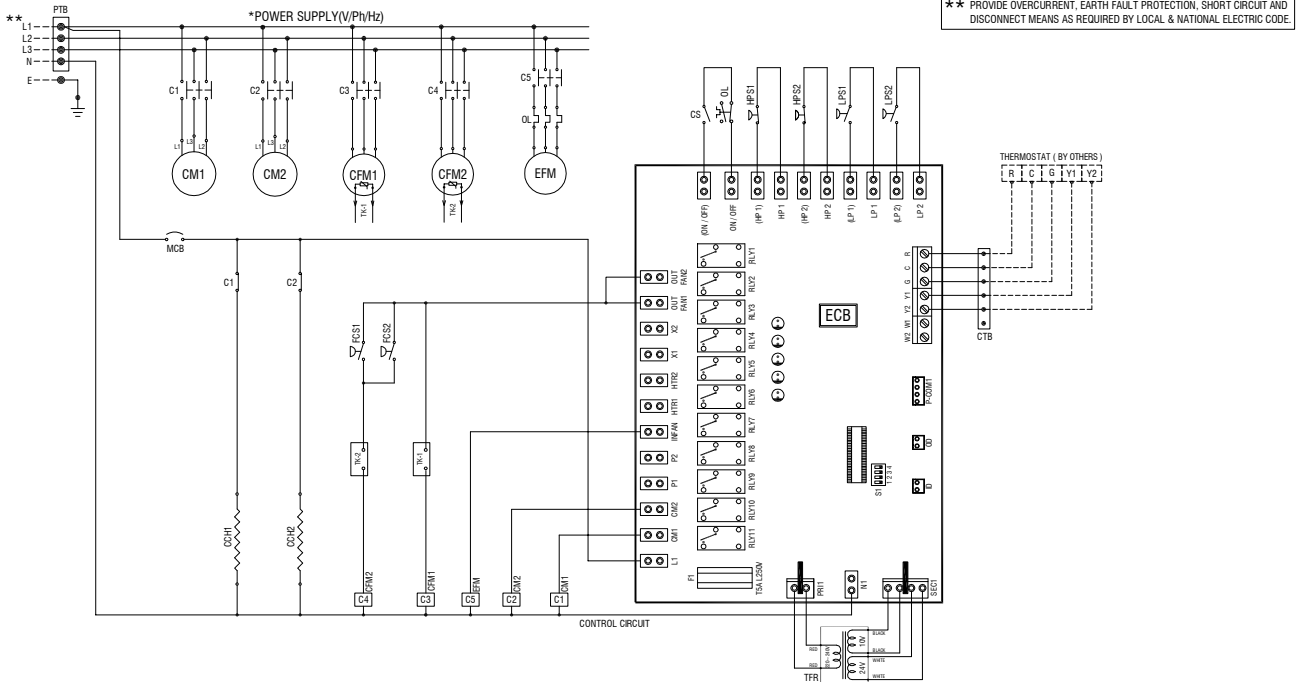
# Typical Wiring Diagram

PACL Models: 52110, 52120 & 52145



LEGEND	
----	FIELD WIRING & FIELD SUPPLIED DEVICES
LPS	LOW PRESSURE SWITCH
HPS	HIGH PRESSURE SWITCH
CS	CONTROL SWITCH
CCH	CRANK CASE HEATER
MCB	MINIATURE CIRCUIT BREAKER
EFM	EVAPORATOR FAN MOTOR
OL	OVERLOAD RELAY
CFM	CONDENSER FAN MOTOR
CM	COMPRESSOR MOTOR
C	CONTACTOR
ECB	ELECTRONIC CONTROL BOARD
PTB	POWER TERMINAL BLOCK
CTB	CONTROL TERMINAL BLOCK
TFR	TRANSFORMER
TK	THERMAL OVERLOAD PROTECTOR

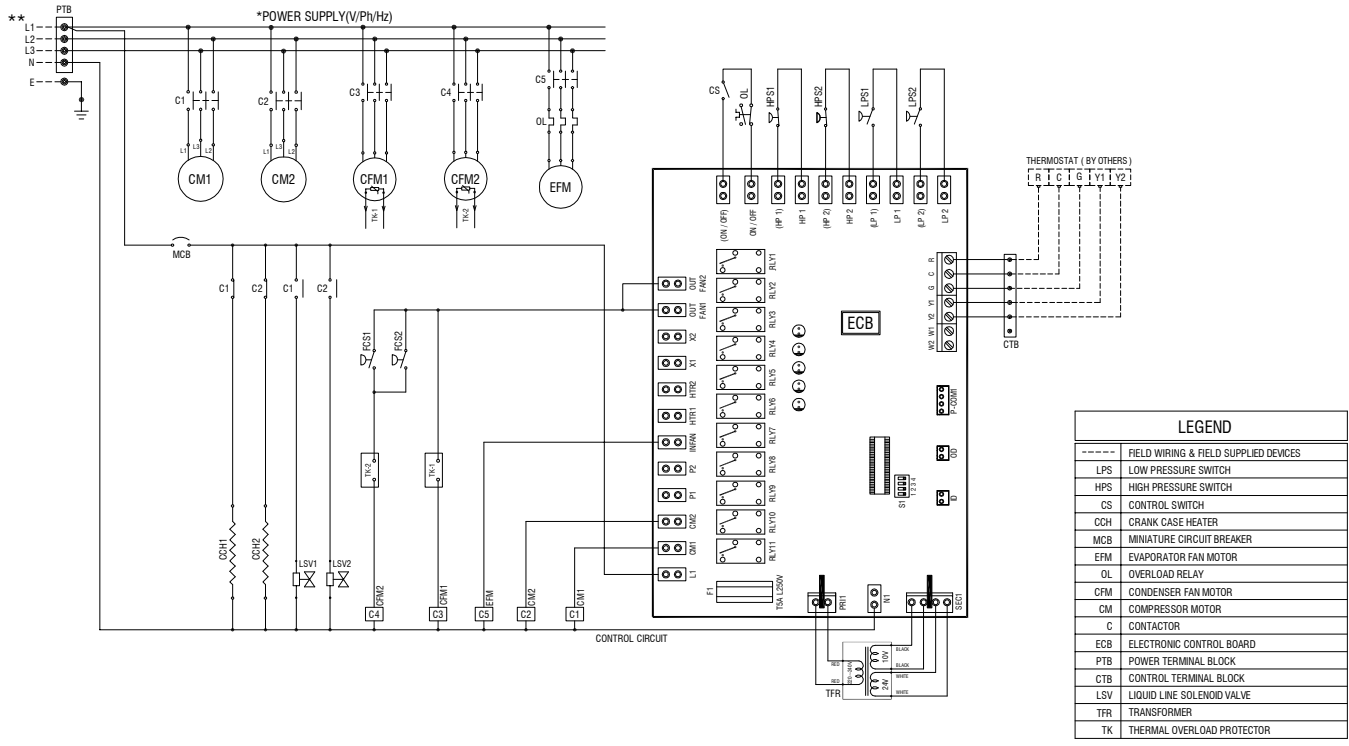
PACL Models: 52160 to 52260



NOTE  
 \* TYPICAL WIRING DIAGRAM SHOWN IS SUITABLE FOR 380-415V/3Ph/50Hz ONLY, FOR 440V/3Ph/50Hz PLEASE CONSULT SKM  
 \*\* PROVIDE OVERCURRENT, EARTH FAULT PROTECTION, SHORT CIRCUIT AND DISCONNECT MEANS AS REQUIRED BY LOCAL & NATIONAL ELECTRIC CODE.

## Typical Wiring Diagram

PACL Models: 52290 & 52330



LEGEND	
-----	FIELD WIRING & FIELD SUPPLIED DEVICES
LPS	LOW PRESSURE SWITCH
HPS	HIGH PRESSURE SWITCH
CS	CONTROL SWITCH
CCH	CRANK CASE HEATER
MCB	MINIATURE CIRCUIT BREAKER
EFM	EVAPORATOR FAN MOTOR
OL	OVERLOAD RELAY
CFM	CONDENSER FAN MOTOR
CM	COMPRESSOR MOTOR
C	CONTACTOR
ECB	ELECTRONIC CONTROL BOARD
PTB	POWER TERMINAL BLOCK
CTB	CONTROL TERMINAL BLOCK
LSV	LIQUID LINE SOLENOID VALVE
TFR	TRANSFORMER
TK	THERMAL OVERLOAD PROTECTOR

**NOTE**  
 \* TYPICAL WIRING DIAGRAM SHOWN IS SUITABLE FOR 380-415V/3Ph/50Hz ONLY. FOR 440V/3Ph/50Hz PLEASE CONSULT SKM

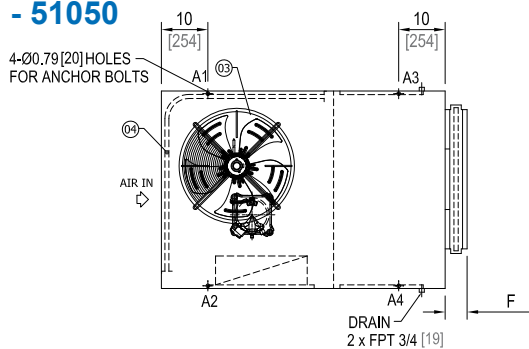
**\*\*** PROVIDE OVERCURRENT, EARTH FAULT PROTECTION, SHORT CIRCUIT AND DISCONNECT MEANS AS REQUIRED BY LOCAL & NATIONAL ELECTRIC CODE.





## Dimensional Data

### PACL Model - 51050



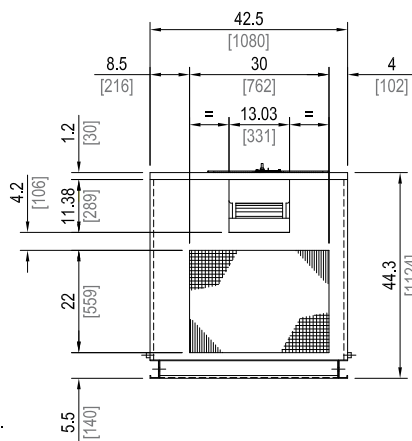
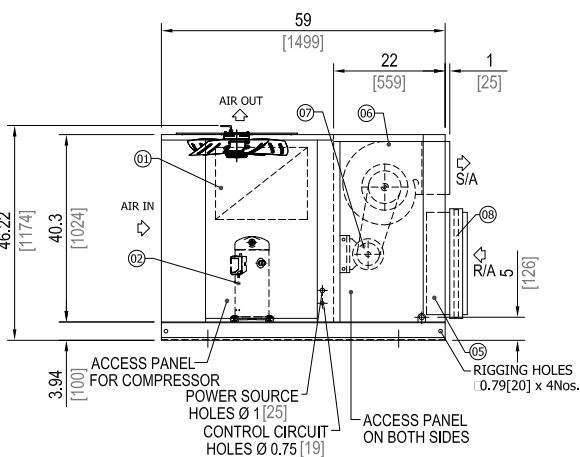
LEGEND	
01	CONTROL PANEL
02	COMPRESSOR
03	CONDENSER FAN
04	CONDENSER COIL
05	EVAPORATOR COIL
06	EVAPORATOR FAN
07	EVAPORATOR FAN MOTOR
08	1" THICK FLAT FILTER

ALL DIMENSIONS ARE IN INCHES [mm]

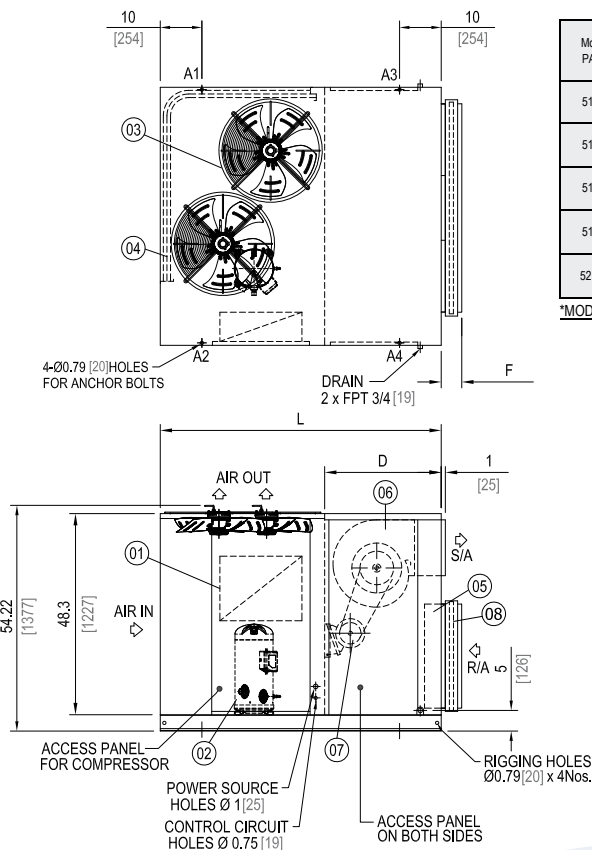
A1-A4 ARE LOADING POINTS

F=3.94 [100] FOR 1" FLAT FILTER (STANDARD)

F=4.93 [125] FOR 2" FLAT FILTER (OPTIONAL)



### PACL Models - 51060 to 52110

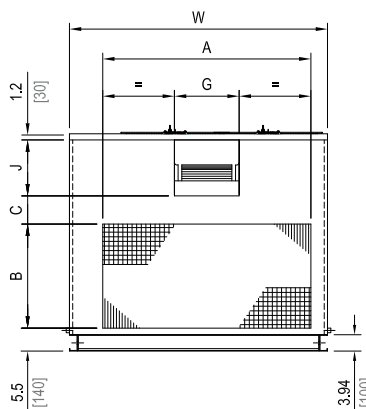


Model PACL	DIMENSIONS							
	L	W	A	B	C	D	J	G
51060	61.5 [1562]	50.6 [1285]	30 [762]	22 [559]	12.2 [309]	22 [559]	11.38 [289]	13.03 [331]
51070		50.6 [1285]	38.6 [980]	24 [610]	10.2 [258]	22 [559]	11.38 [289]	13.03 [331]
51085		50.6 [1285]	38.6 [980]	24 [610]	8.1 [207]	28 [711]	13.43 [341]	15.55 [395]
51095		62 [1575]	50 [1270]	25 [635]	7.1 [181]	28 [711]	13.43 [341]	15.55 [395]
52110*		68 [1727]	56 [1422]	25 [635]	7.1 [181]	28 [711]	13.43 [341]	15.55 [395]

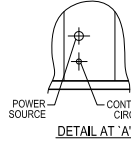
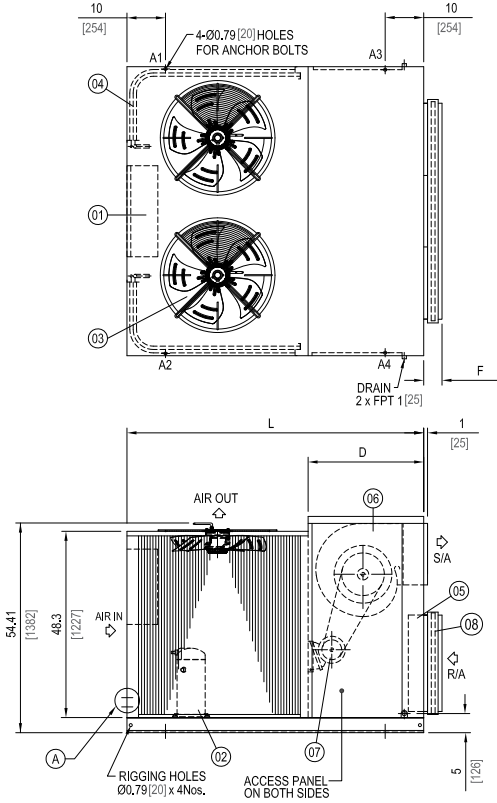
\*MODEL WITH TWO COMPRESSOR

ALL DIMENSIONS ARE IN INCHES [MM]

Table 9



## Dimensional Data PACL Models - 52120 & 52145



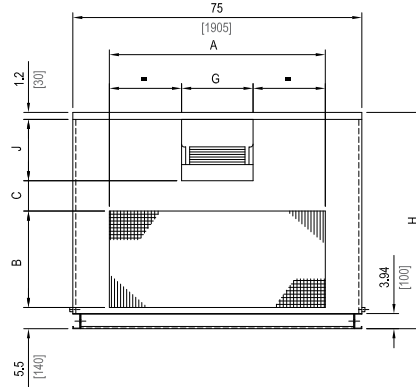
ALL DIMENSIONS ARE IN INCHES [mm]  
A1-A4 ARE LOADING POINTS  
F=3.94[100] FOR 1" FLAT FILTER(STANDARD)  
F=4.93[125] FOR 2" FLAT FILTER(OPTIONAL)

LEGEND	
01	CONTROL PANEL
02	COMPRESSOR
03	CONDENSER FAN
04	CONDENSER COIL
05	EVAPORATOR COIL
06	EVAPORATOR FAN
07	EVAPORATOR FAN MOTOR
08	1" THICK FLAT FILTER

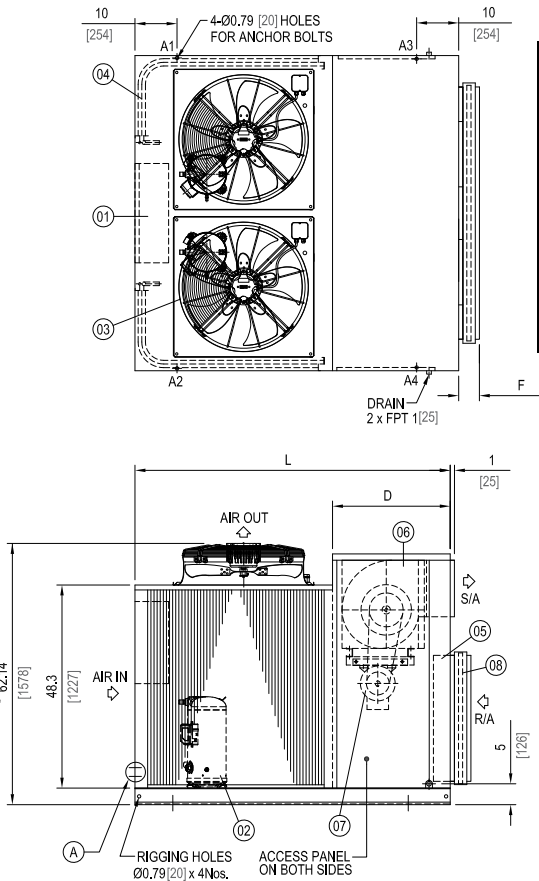
Model PACL	DIMENSIONS							
	L	A	B	C	D	J	G	H
52120	75 [1905]	56 [1422]	25 [635]	7.1 [181]	28 [711]	13.43 [341]	15.55 [395]	52.2 [1327]
52145	77 [1956]	60 [1524]	30 [762]	8.5 [216]	30 [762]	15.91 [404]	18.5 [471]	61.12 [1552]

ALL DIMENSIONS ARE IN INCHES [MM]

Table 10



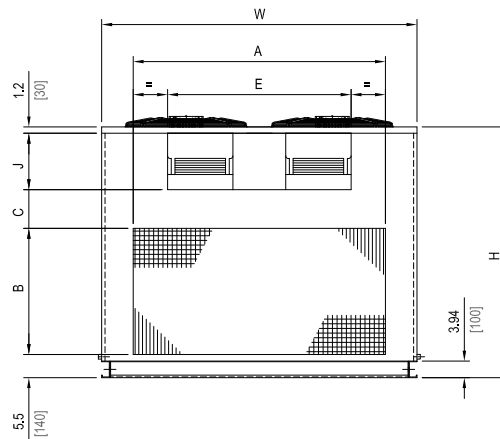
## PACL Models - 52160 to 52260



Model PACL	DIMENSIONS									
	L	W	A	B	D	J	E	H	C	
52160	75 [1905]	75 [1905]	60 [1524]	32 [813]	28 [711]	13.43 [341]	43.7 [1109]	59.63 [1515]	7.5 [191]	
52180	75 [1905]	75 [1905]	60 [1524]	32 [813]	28 [711]	13.43 [341]	43.7 [1109]	59.63 [1515]	7.5 [191]	
52205	85 [2159]	80 [2032]	70 [1778]	32 [813]	28 [711]	13.43 [341]	43.7 [1109]	59.63 [1515]	7.5 [191]	
52225	85 [2159]	80 [2032]	70 [1778]	32 [813]	28 [711]	13.43 [341]	43.7 [1109]	59.63 [1515]	7.5 [191]	
52240	101.6 [2580]	88 [2235]	78 [1981]	36 [914]	38.6 [980]	15.91 [404]	52.3 [1328]	67.11 [1705]	8.5 [216]	
52260	101.6 [2580]	88 [2235]	78 [1981]	36 [914]	38.6 [980]	15.91 [404]	52.3 [1328]	67.11 [1705]	8.5 [216]	

ALL DIMENSIONS ARE IN INCHES [MM]  
\* ADD 44MM MORE FOR MODEL 52240 & 52260

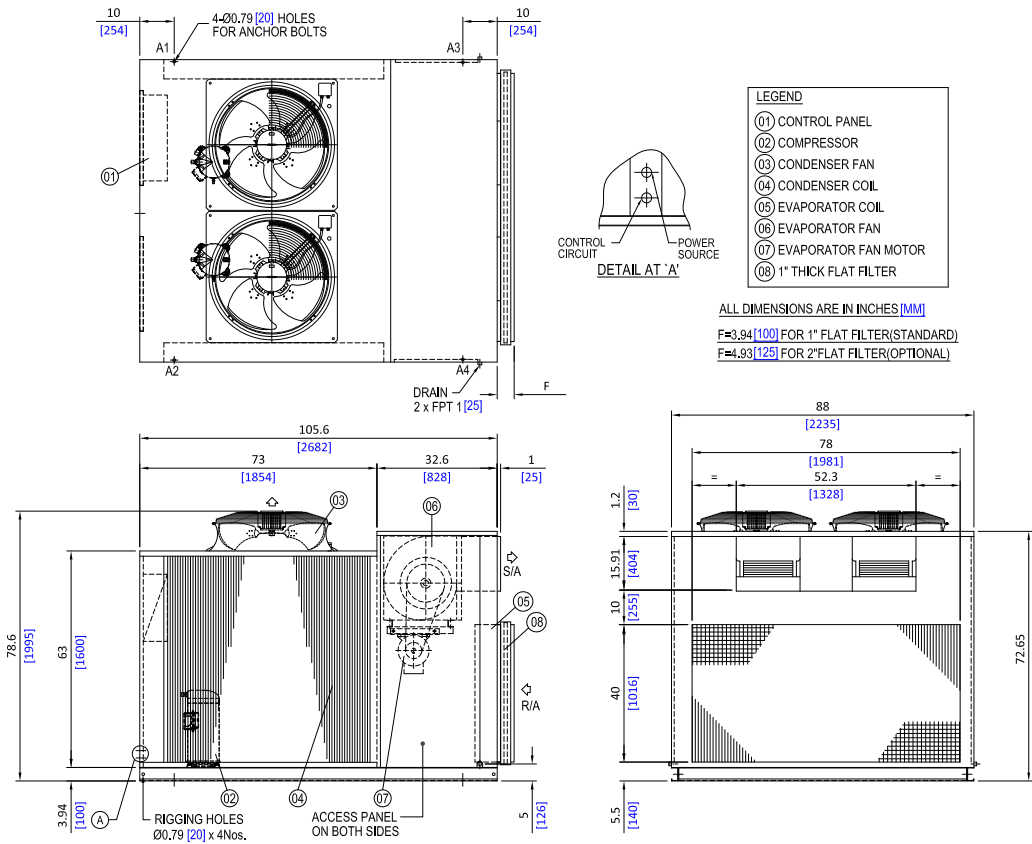
Table 11





## Dimensional Data

### PACL Models - 52290 & 52330



## Loading Points & Weights

MODEL PACL	LOAD AT EACH POINT Lbs (Kgs)				TOTAL WEIGHT
	A1	A2	A3	A4	
51050	177 [80]	213 [96]	176 [80]	179 [81]	745 [338]
51060	198 [90]	233 [106]	200 [91]	202 [92]	833 [379]
51070	209 [95]	259 [117]	197 [89]	190 [86]	855 [387]
51085	245 [111]	306 [139]	225 [102]	221 [100]	997 [452]
51095	285 [129]	315 [143]	246 [112]	236 [107]	1082 [491]
52110	282 [128]	315 [143]	263 [119]	255 [116]	1115 [506]
52120	366 [166]	362 [164]	307 [139]	291 [132]	1326 [601]
52145	407 [185]	400 [181]	307 [139]	290 [131]	1404 [636]
52160	454 [206]	445 [202]	330 [150]	314 [142]	1543 [700]

MODEL PACL	LOAD AT EACH POINT Lbs (Kgs)				TOTAL WEIGHT
	A1	A2	A3	A4	
52180	506 [229]	496 [225]	371 [168]	353 [160]	1725 [782]
52205	529 [240]	523 [237]	423 [192]	411 [186]	1886 [855]
52225	529 [240]	523 [237]	423 [192]	411 [186]	1886 [855]
52240	612 [277]	601 [273]	493 [224]	475 [215]	2181 [989]
52260	613 [278]	604 [274]	495 [224]	476 [216]	2188 [992]
52290	665 [301]	654 [297]	536 [243]	516 [234]	2371 [1075]
52330	669 [304]	659 [299]	539 [245]	520 [236]	2387 [1084]

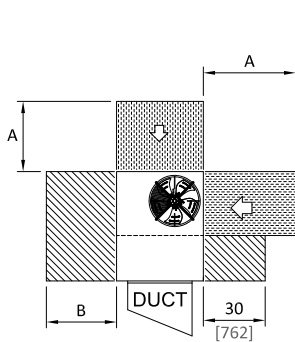
Table 12

Recommended Clearances

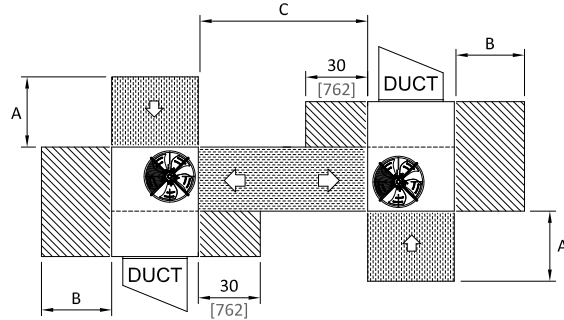
MODEL PACL	A	B	C
51050	44 [1118]	34 [864]	72 [1829]
51060	52 [1321]	42 [1067]	88 [2235]
51070		54 [1372]	
51085		60 [1524]	
51095			
52110			

ALL DIMENSIONS ARE IN INCHES [MM]

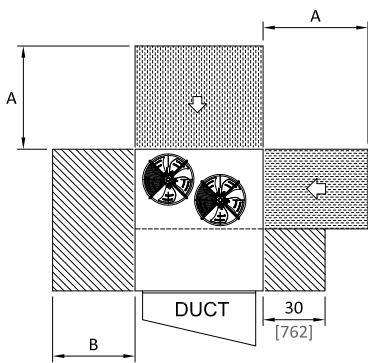
Table 13



PACL- 51050

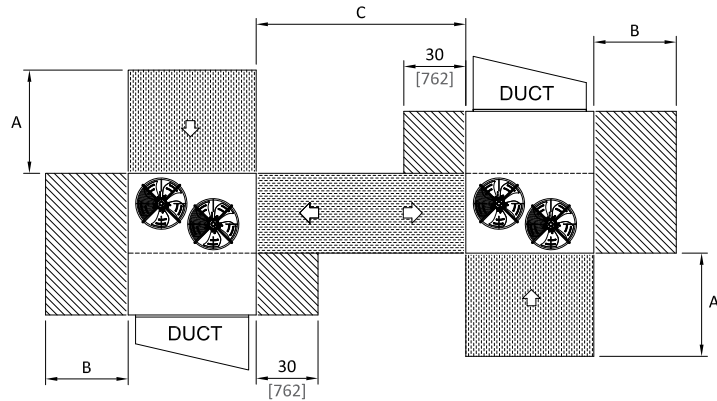


PACL- 51050



PACL- 51060 to 52110

SINGLE UNIT



PACL- 51060 to 52110

MULTIPLE UNIT

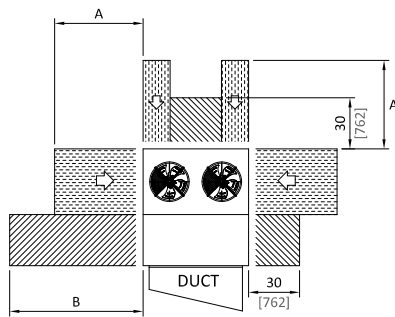
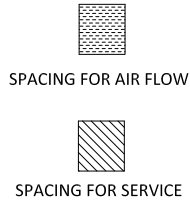


# Recommended Clearances

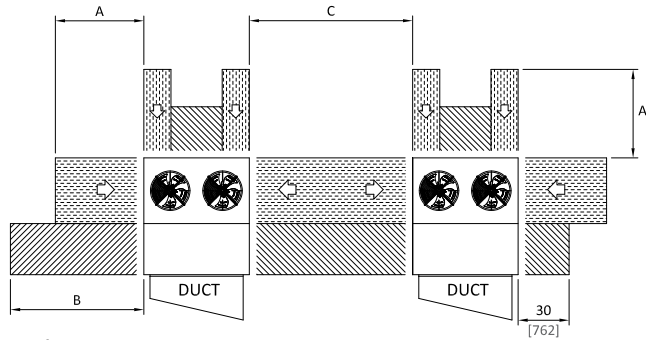
MODEL PACL	A	B	C	
52120	52 [1321]	60 [1524]	88 [2235]	
52145		64 [1626]		
52160				74 [1880]
52180				
52205				82 [2083]
52225				
52240	68 [1727]	120 [3048]		
52260				
52290				
52330				

Table 14

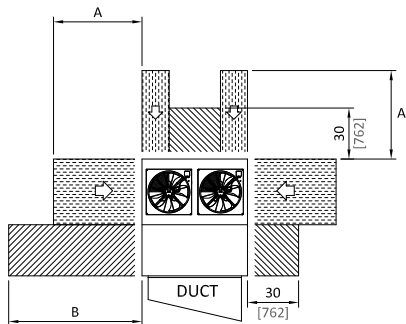
ALL DIMENSIONS ARE IN INCHES [MM]



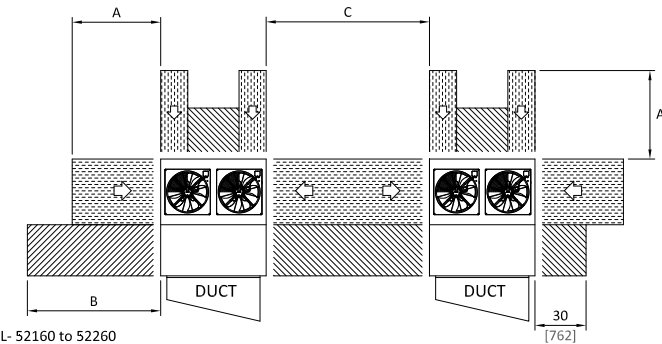
PACL- 52120 & 52145



PACL- 52160 to 52260



PACL- 52290 & 52330

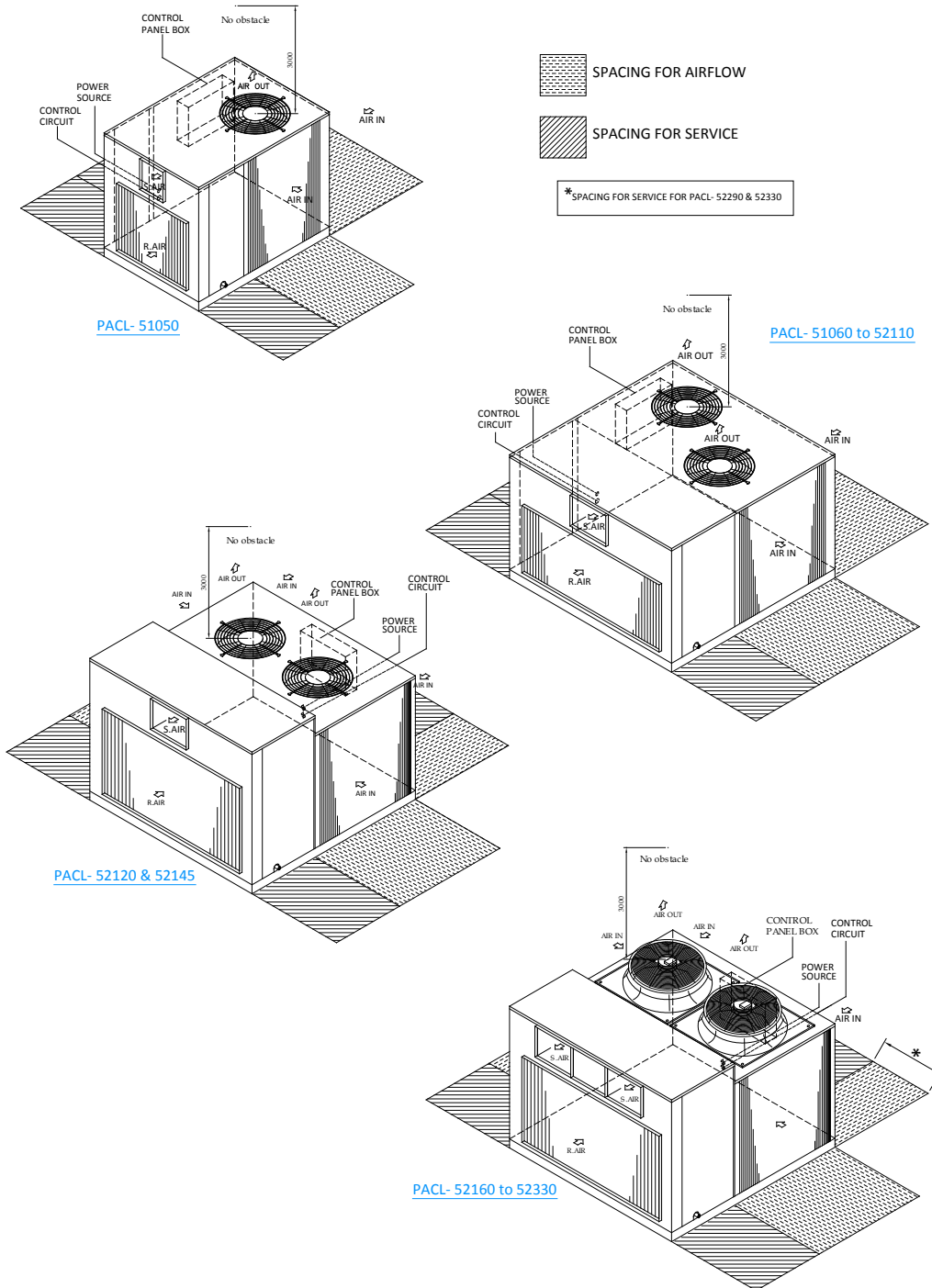


Single Unit

Multiple Unit

## Installation and Commissioning

- Install the unit in such a location which is flat and strong enough to support its weight.
- Provide a trap of over 2" (50mm) in the drain piping for water seal.
- All field wiring must comply with applicable local and national codes.
- Connect supply and return ducts as shown.
- Service spacing should be provided as shown in the figure. If any obstacles are around the unit, distributed air is short-circuited so that the unit stops frequently and access to the unit is difficult for inspection and aftersales services.





# GUIDE SPECIFICATIONS

## GENERAL

Packaged Air Conditioners shall be composed of compressor(s), condenser & evaporator coils with fans, refrigerant piping, electrical components & enclosing cabinet in one piece. These units shall be factory assembled, internally wired, fully refrigerant charged with R22, tested under strict quality standards & are suitable for outdoor installation on rooftop or ground level with ducted system.

## COMPRESSOR(S)

Compressor shall be hermetically sealed, compact high efficiency and low noise scroll type. These compressors are refrigerant gas cooled, furnished with advanced scroll temperature protection or internal motor protection.

## CONDENSER COIL(S)

Condenser coils shall be air cooled with integral sub cooler, constructed of special inner grooved seamless copper tubes 3/8" OD mechanically expanded into Corrugated aluminium fins. These coils shall be tested against leakage by air pressure of 525psig (3620kPa) under water, cleaned & dehydrated at the factory.

## CONDENSER FAN(S) & MOTOR(S)

Condenser Fans shall be direct driven propeller type discharging air vertically upward, equipped with statically & dynamically balanced aluminum alloy blades, inherent corrosion resistant shaft & PVC coated steel wire fan guard. Condenser fan motor(s) shall be Totally Enclosed Air Over (TEAO), 4 pole or 6 pole with class-F insulation, minimum IP-54 protection & wired to unit control panel.

## EVAPORATOR COIL

Evaporator coil shall be constructed of seamless copper tubes 3/8" OD mechanically bonded to aluminum (copper) Corrugated fins. Coil consists of headers of seamless copper tubing, thermostatic expansion valve(s) & multi-circuited distributor(s). These coils shall be tested against leakage by air pressure of 300 psig (2068 kPa) under water, cleaned & dehydrated at the factory. Coil shall conform to AHRI-410.

## EVAPORATOR FAN(S) & MOTOR

Fans of evaporators shall be forward curved, double inlet double width (DIDW), centrifugal type, statically & dynamically balanced, mounted on a single heavy duty shaft with permanently lubricated bearings & driven by V belt with an adjustable variable pitch motor pulley. Motor shall be Totally Enclosed Fan Cooled (TEFC), 4 poles, class-F insulated, minimum IP55 protection & wired to unit control panel.

## REFRIGERANT PIPING

The refrigerant circuit piping shall be fabricated from ACR grade copper piping, with 1 & 2 independent refrigerant circuits, each liquid line shall include filter drier & thermostatic expansion valve. Suction line shall be insulated with 1/2" (12 mm) wall thickness enclosed cell pipe insulation with maximum k factor 0.28 Btu.in/ft<sup>2</sup>h<sup>o</sup>f (0.040 W / m<sup>o</sup>k).

## CASING

Casing shall be made of hot dip galvanized (zinc coated), phosphatized steel sheets which are then electrostatically polyester powder coated to provide an extremely tough, scratch resistance & excellent anti-corrosive protection. Casing shall pass 1000 hours in 5% salt spray testing at 95°F (35°C) & 95% relative humidity as per ASTM B117. Evaporator section shall be sealed with vinyl gaskets & completely insulated faced with black glass tissue (BGT) heavy density, fire retardant, permanent odorless fiberglass insulation of minimum 1" (25 mm) thickness and 32 kg/m<sup>3</sup> density having maximum k factor 0.23 Btu.in/ft<sup>2</sup> h<sup>o</sup>f. (0.033 W / m<sup>o</sup>k). Unit casing shall be provided with access panels for easy service and maintenance of all unit parts.

## FILTER SECTION

Flat Filter Section incorporating 1" (25mm) thick is provided as standard and 2" (50mm) thick filter having an average arrestance efficiency of 54% as per ASHRAE Standard 52.1 or equivalent can be provided as an option.

## CONTROL PANEL

The panel shall be factory wired and confirm to IP-54 requirements. Control panel shall contain compressor and motor starting contactors, electronic control board for unit operation, compressor anti-recycle time delay, control on/off switch, control circuit breaker, power & control terminal blocks and High & Low pressure protection.

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