

Cooline[®]

AIR CONDITIONERS

from  **Zamil**



ASME
CERTIFIED FOR EXCELLENCE



Packaged Units

PQ Series
PQ036 - PQ360
3 TR thru 30 TR
10 kW thru 105 kW



Higher quality of indoor living

Our product line ...



Window ACs & Mini-Split Units



Free Standing Ceiling/Floor & Cassette units



Ducted Split Units



Condensing & Packaged Units



Chillers & Double Skin AHU's



Mobile AC



Control for Building Automation, Security & Fire Alarms

Company Business

Zamil Air Conditioners was founded in 1974 as one of the first air conditioning business to be established in Saudi Arabia and today is a leading international manufacturer of air conditioning systems and is No. 1 in the Middle East.

Zamil Air conditioners manufactures both consumer and central air conditioners and has sales operations in over 55 countries in the Middle East, Europe, Africa and Asia.

The company's operations are structured into four Strategic Business Units (SBUs) supporting five in-house product and service brands as well as a number of international brands under the OEM sales.

The five in-house brands are Classic, Cooline, CoolCare, Clima Tech and Geoclima.

The four SBUs are:

1. Consumer Business Unit supporting Classic, Cooline, GE and OEM brands for consumers.
2. Unitary & Applied Business Unit supporting Classic, Cooline, GE and OEM brands for commercial and industrial customers.
3. Zamil CoolCare providing engineering & project management services, HVAC maintenance, retrofit services and parts.
4. Geoclima srl is an independent business supporting other SBUs for their requirement of Chillers & Double skin AHU's.

The first three SBUs - Consumer Products, Unitary & Applied Products and CoolCare Service direct their business operations from the corporate headquarters at Dammam, Saudi Arabia.

Geoclima has its engineering & production departments located at Monfalcone, Italy and has a design center in Austria.

All the four SBUs, while operating independently, supplement each other's activities in a way that makes synergy work at its best and achieve the corporate goals of maximizing customer satisfaction.

Factories and Productions

Zamil Air Conditioners has two manufacturing plants in Dammam, Saudi Arabia and has one speciality production facility in Italy operated by Geoclima.

The company can produce up to 550,000 Room Air Conditioners, 300,000 Mini-Split systems and 50,000 Central Air Conditioning systems per year.

Quality & Product Certificates

The Quality systems and policies at Zamil Air Conditioners comply with the required ISO 9001:2000 certification.

Zamil Air Conditioners is the first company in Saudi Arabia to receive the SASO (Saudi Arabia's Standard Organization) Certificate for Room Air Conditioners. ZAC's products are also certified with:

1. CE (Council of European Community)
2. UL (Underwriters Laboratory)
3. Eurovent
4. ASME
5. ETL

Other awards include the prestigious Engineering Excellence Award of General Electric and the inaugural Prince Mohammed bin Fahd Al Saud Award for Factory Safety.

Our Products

In addition to the consumer products such as the Room Air Conditioners (RAC) and the Mini Splits, Zamil Air Conditioners manufactures a host of residential, commercial and industrial air conditioners. This broad range extends from the Concealed Units up to 5 tons, the Ducted Splits up to 30 tons, the Packaged Units up to 90 tons, the Single and Double Skin Air Handling Units up to 70,630 CFM and the Water Chillers up to 660 tons cooling capacity.

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*CONTINUING RESEARCH RESULTS IN STEADY IMPROVEMENTS.
THEREFORE, THESE SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE.*

Features



General

Enjoy the "Comfort" series by "COOLINE Air Conditioners"

The "Comfort" series of Packaged units (PQ) is another perfect illustration of how "COOLINE Air Conditioners" can simplify the air conditioning business for Clients, Consultants and Contractors. It is a clear statement for all that your life will be more "Comfortable" when you use the (PQ) series.

Some of the Salient Features

Quality/Reliability:

Using proven reliable components, the (PQ) "Comfort" series is designed, assembled and produced to meet the highest quality standards. It will operate to the satisfaction of the End User years after years. That translates into peace of mind and sustained "Comfort".



Simple Selection/Design Integration:

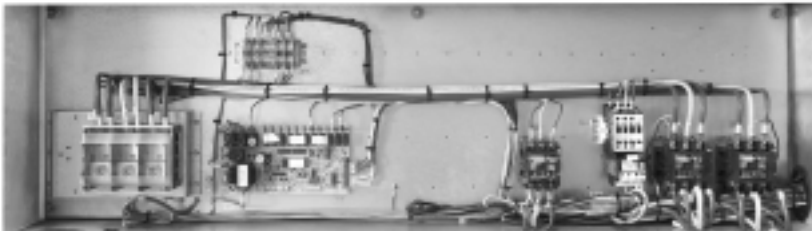
The (PQ) series is conceived to be easily fitted into the system design. Its compact dimensions and optimized air flow performance will provide the designer with an added "Comfort" in the process of selecting and integrating the units in the overall design.

Simple Installation/Maintenance:

Connect the Power cables and the Control wiring (all located in one area), connect ducting using the built-in duct flanges, arrange for proper drainage, reach in for any part/component through wide ample service/access doors...Installation and Maintenance cannot be more "Comfortable".

Ease of Operation:

Let the digital microprocessor controller do all the thinking! Just set the desired temperature level and the microprocessor controller will take care of all the operating functions while monitoring any abnormal signal to prevent/protect the unit and its components from any damage...and ensuring the complete "Comfort" for the occupants.



And on top of that, the (PQ) "Comfort" series comes with a host of useful features such as the different types of corrosion protection solutions for the coils, Fresh Air Damper and UV Flow™ for added IAQ and "Comfort".

MODEL DECODING

MODELS: PQ036 - PQ060 (DIRECT DRIVE MOTOR)

1 & 2 BASIC PACKAGED UNIT	3, 4 & 5 NOMINAL COOLING CAPACITY (MBH)	6 ELECTRICAL SUPPLY (V-Ph-Hz)	7 BLOWER MOTOR	8 DRIVE OPTIONS	9 HEATER OPTIONS (KW/STAGE)	10 EVAPORATOR COIL	11 CONDENSER COIL	12 PDS OPTION	13 ELECTRICAL OPTIONS	14 ACCESSORIES	15 FILTER OPTIONS	16 THERMOSTAT OPTION
PQ	036 048 060	L : 380/415-3-50 (4 WIRE)	W : 0.75 HP ODP (DIRECT DRIVE) Y : 1 HP ODP (DIRECT DRIVE)	N : DIRECT DRIVE	N : NO HEATER A : 5/1 B : 6/1 C : 7.5/1 D : 10/2 (For PQ060 only) E : 12/2 (For PQ060 only)	J : ALUMINUM FIN K : COATED ALUMINUM FIN L : COPPER FIN M : ALUMINUM FINS WITH TG. N : COPPER FINS WITH TG.	J : ALUMINUM FIN K : COATED ALUMINUM FIN L : COPPER FIN M : ALUMINUM FINS WITH TG. N : COPPER FINS WITH TG.	N : STD. UNIT WITHOUT PDS	N : STD. UNIT I : ANTI-ICE U : UVM V : VOLT FREE CONTACTS* K : ADJ. PRESSURE SWITCH A : I & U B : I & V C : U & V D : I, U & V E : I, U & K F : I, V & K G : U, V & K H : I, U, V & K J : I & K L : V & K M : U & K	N : STANDARD UNIT	A : 1" THICK ALUMINUM	S : UNIT WITH THERMO- STAT D : UNIT WITHOUT THERMO- STAT

NOTE: * Volt free contact option is available as: A) Unit ON/TRIP indication, B) Compressor RUN/TRIP indication, C) Blower motor RUN/TRIP indication.

MODELS: PQ075 - PQ360 (BELT DRIVEN MOTOR)

1 & 2 BASIC PACKAGED UNIT	3, 4 & 5 NOMINAL COOLING CAPACITY (MBH)	6 ELECTRICAL SUPPLY (V-Ph-Hz)	7 BLOWER MOTOR	8 DRIVE OPTIONS	9 HEATER OPTIONS (KW/STAGE)	10 EVAPORATOR COIL	11 CONDENSER COIL	12 PDS OPTION	13 ELECTRICAL OPTIONS	14 ACCESSORIES	15 FILTER OPTIONS	16 THERMOSTAT OPTION
PQ	075 090 100 120 150 180 210 240 300 360	L : 380/415-3-50 (4 WIRE)	R : 1.5 HP ODP Z : 2 HP ODP Z : 2 HP ODP E : 3 HP ODP E : 3 HP ODP E : 3 HP ODP E : 3 HP ODP G : 5 HP ODP G : 5 HP ODP G : 5 HP ODP G : 5 HP ODP J : 7.5 HP ODP J : 7.5 HP ODP J : 7.5 HP ODP L : 10 HP ODP L : 10 HP ODP M : 15 HP ODP	J : ALT. I K : ALT. II	N : NO HEATER B : 6/1 C : 7.5/1 D : 10/2 E : 12/2 F : 15/2 G : 20/2 (For PQ090 - 150) H : 25/2 (For PQ090 - 150) N : NO HEATER F : 15/2 G : 20/2 H : 25/2 J : 30/2 K : 35/2 L : 40/2 (For PQ240 - 360)	J : ALUMINUM FIN K : COATED ALUMINUM FIN L : COPPER FIN M : ALUMINUM FINS WITH TG. N : COPPER FINS WITH TG.	J : ALUMINUM FIN K : COATED ALUMINUM FIN L : COPPER FIN M : ALUMINUM FINS WITH TG. N : COPPER FINS WITH TG.	N : STD. UNIT WITHOUT PDS P : STD. UNIT WITH PDS	N : STD. UNIT I : ANTI-ICE U : UVM V : VOLT FREE CONTACTS* K : ADJ. PRESSURE SWITCH A : I & U B : I & V C : U & V D : I, U & V E : I, U & K F : I, V & K G : U, V & K H : I, U, V & K J : I & K L : V & K M : U & K	N : STANDARD UNIT C : STD. UNIT WITH FRESH AIR HOOD & MANUAL DAMPER A : ECONOMIZER B : ECONOMIZER WITH ENTHALPY SENSOR	A : 1" THICK ALUMINUM B : 2" THICK ALUMINUM	S : UNIT WITH THERMO- STAT D : UNIT WITHOUT THERMO- STAT

NOTE: * Volt free contact option is available as: A) Unit ON/TRIP indication, B) Compressor RUN/TRIP indication, C) Blower motor RUN/TRIP indication.

BLOWER DRIVE OPTIONS

MODEL NUMBER	OPTION	MOTOR			BLOWER			APPROX. SPEED CHANGE PER PULLEY TURN (RPM)
		HP	RPM	PULLEY PITCH DIA. (INCH)	SPEED RANGE (RPM)		PULLEY PITCH DIA. (INCH)	
					MINIMUM	MAXIMUM		
PQ075	ALT. I	1.5	1450	2.7 - 3.7	851	1166	4.6	53
	ALT. II	2	1450	2.7 - 3.7	955	1309	4.1	59
PQ090	ALT. I	2	1450	2.7 - 3.7	851	1166	4.6	53
	ALT. II	3	1450	3.1 - 4.1	1096	1450	4.1	59
PQ100	ALT. I	2	1450	2.7 - 3.7	699	958	5.6	43
	ALT. II	3	1450	3.1 - 4.1	977	1292	4.6	53
PQ120	ALT. I	3	1450	3.1 - 4.1	737	975	6.1	40
	ALT. II		1450	3.1 - 4.1	881	1166	5.1	57
PQ150	ALT. I	3	1450	3.7 - 4.7	813	1033	6.6	37
	ALT. II	5	1450	4.8 - 6.0	941	1176	7.4	47
PQ180	ALT. I	5	1450	3.7 - 4.7	725	921	7.4	33
	ALT. II	7.5	1450	4.3 - 5.5	891	1139	7.0	40
PQ210	ALT. I	5	1450	3.7 - 4.7	766	974	7.0	35
	ALT. II	7.5	1450	4.3 - 5.5	891	1139	7.0	41
PQ240	ALT. I	7.5	1450	4.3 - 5.5	663	848	9.4	31
	ALT. II		1450	4.3 - 5.5	843	1078	7.4	39
PQ300	ALT. I	7.5/10	1450	4.3 - 5.5	725	927	8.6	34
	ALT. II		1450	4.3 - 5.5	843	1078	7.4	39
PQ360	ALT. I	10	1450	4.3 - 5.5	692	886	9.0	32
	ALT. II	15	1450	5.5 - 6.9	848	1064	9.4	36

STANDARD SPECIFICATIONS

A. General

Packaged cooling or combination heating and cooling units suitable for mounting on the roof or ground. The packaged unit consists of reciprocating compressors, cooling coil, condenser coil, control wiring and interconnecting piping - all factory assembled and mounted on heavy gauge G-90 galvanized steel sheet press formed base, ready for field connection to utilities and ducts. The packaged unit is of rigid construction with holes provided in the base rails for overhead rigging. The unit is provided with an integral weather resistant control panel.

These units are rated and tested in accordance with ARI standard 210/ ARI 360.

B. Unit Enclosure

Panels are of heavy gauge, G-90 galvanized steel sheet with removable access panels, completely weatherized for outdoor installation and properly reinforced and brazed. Panels and access doors are provided for inspection and access for all internal parts. Enclosures are provided with adequately reinforced points of support for setting the unit. Steel sheet panels are zinc-coated and galvanized by the hot dip process of lock forming quality conforming to ASTM A 653 commercial weight G-90, followed by baked on electrostatic polyester dry powder coat paint, on all external panels.

C. Compressor

Compressors are hermetic reciprocating for PQ036 - PQ060 & PQ090 - PQ100 and hermetic scroll for all other models. They are provided with all the standard controls and accessories necessary for safe operation. These are equipped with internal motor protector, factory installed crank case heater and rubber vibration isolator for quiet and efficient operation.

D. Air Cooled Condensing Section

1. The air-cooled condensing section is enclosed within the unit housing and consists of condenser coil, fan(s), electric motor(s) and inherently protected compressor(s). Inner grooved copper tubes with wall thickness of 0.0175 inches (0.445 mm), mechanically bonded to enhanced aluminum fins are standard for all condenser coils. Return bends have 0.022 inch thickness (0.56 mm). **As an option, corrugated copper fins or enhanced coated aluminum fins may be provided.** Tube support sheets are galvanized steel, formed to provide structural strength.
2. Fans are propeller type, direct driven, upward discharge and provided with fan grille mounted on the casing.
3. Motors are totally enclosed air-over type with class F insulation. Inherent thermal protection is automatic reset type.

E. Evaporator Coil Section

1. All cooling coils are of enhanced louvered fins and inner grooved copper tubes with wall thickness of 0.0175 inches (0.445mm), mechanically bonded to aluminum fins . Return bend has 0.022 inch thickness (0.56 mm). **As option, enhanced coated aluminum fins or corrugated copper fins may be provided.** Tube support sheets are galvanized steel, formed to provide structural strength.
2. **Drain Pan:** An insulated drain Pan made of G-90 galvanized steel is provided.
3. **Insulation:** Insulation is supplied in adequate density and thickness for all units to prevent condensation from forming on the unit casing. Insulation meets the requirements of NFPA 90A and is protected against deterioration and erosion from air currents.

F. Evaporator Fan

PQ036 - PQ060: Evaporator fan is of a centrifugal forward-curved blade design and sized to meet system airflow/pressure using direct drive motors. These fans are statically / dynamically balanced in the fan housing during final assembly. Fan motors have ball bearings and conform to NEMA MG-1 & MG-2. Motor starters are magnetic contactor, across-the-line type.

PQ075 - PQ360: Evaporator fan is of centrifugal forward-curved blade design capable of handling total required CFM and static pressure in the low and the medium ranges. Casings are made of galvanized steel. Blower motors are of the open drip proof type (**totally enclosed types are optional**) and conform to NEMA MG-1 and MG-2. Fan drive is through adjustable pitch pulleys and belt driven. Blower motor is mounted on adjustable base and secured by locking device. Fan wheels shafts and bearing are selected to operate at 25% below first critical speed. Pillow block bearings are selected for at 200,000 hours average life at design operating conditions. Shaft is turned, ground and polished from solid steel. Fans and pulleys are keyed to shaft and designed for continuous operation at maximum motor horse power and fan speed. All rotating components and assemblies are statically and dynamically balanced and every unit is vibration tested before shipment from the factory.

G. Microprocessor Controller

These Packaged units are provided with a microprocessor control board incorporating the following features:

- **BALANCE LOADING OF COMPRESSORS:** The unit's electronic control automatically operates lead/lag sequence of compressors. This is to load the compressors evenly over long periods of operation. If required however, compressor-1 can also be set to always lead. In this case, compressor-1 always starts first and stops last. (Selectable through dip switch setting on control board).
- **PUMP DOWN FUNCTION:** In units equipped with pump down system, the controller provides the time delay between solenoid's opening and compressor starting to equalize the pressure in the system necessary for compressor to start-up. (Selectable through dip switch setting on control board).
- **COMPRESSOR ANTI-RECYCLING PROTECTION:** The controller has a built-in 3 minutes minimum off timer for compressor. This is for compressor protection in case of accidental manual re-set or immediate re-cycling of thermostat due to load demand.
- **COMPRESSOR LOCK-OUT FUNCTION:** If any of the unit's safety control trips due to abnormal conditions, the electronic controls locks out the compressor after a pre-determined timing preventing a re-start unless attended by a qualified service technician. The unit can be re-started through thermostat re-set after ensuring safe system conditions.
- **FAULT DIAGNOSTICS:** In case of system fault, LED's on the board emits a flashing signal indicating where the fault is. This is to guide the service technician in identifying the fault.
- **DIGITAL I/O's:** The unit's control board is compatible to operate with a DDC controller or any standard 24V a.c. thermostat commercially available.
- **SEQUENTIAL CONTROL:** With input signals from the thermostat, the motors in the equipment is started in sequential order: supply fan – condenser fan – compressor; at a pre-determined timings.

OPTIONS AND ACCESSORIES

A. Electric Heaters

Electric heaters are of the resistance open coil type and conform to the requirements of UL 573 or equivalent. Electrical characteristics, kW capacities and number of stages are as indicated. Airflow switches, fusible links and overheat limit thermostats are provided to shut-off power in case of airflow failure/overheat. Electric heater kit is installed as an externally mounted kit at the supply opening.

B. UV Flow™ Light Emitters:

The damp & dark environment inside the unit could contribute for the growth and development of hazardous bacteria and fungi. The UV flow™ concept uses emitter of Ultra Violet to simulate the effect of healthy sun radiation. This will inhibit the growth of these microorganism reducing in this manner mold related allergies and diseases. Breath safely with UV flow™.

To order UV flow™ use the kit number in tables below:

MODEL No.	PQ036/048/060	PQ075	PQ090	PQ100	PQ120/150	PQ180/210	PQ240/300	PQ360
KIT PART No.	700-391-30	700-391-23	700-391-24	700-391-25	700-391-26	700-391-27	700-391-28	700-391-31

C. Economizer

This can be provided as an option to be ordered separately if required for horizontal discharge units only. Economizer utilizes cool outside air to satisfy cooling load to minimize energy consumption by maintaining poise between outside air intake and compressor operation when required as per load demand.

The Economizer is operative either by a dry bulb Outdoor Air Thermostat (OAT) or a Solid State Enthalpy Controller (EC) to sense the outdoor air temperature. The unit is equipped with an electronic control board, the **PsychroTroll™** with a sensitive feedback system carefully modulating the damper to allow correct percentage of fresh air and return air. The **PsychroTroll™** is designed to match with a separate COOLINE electronic controller & thermostat.

D. Electronic Thermostat

General information: Electronic thermostat shall control one or two stage heating and cooling applications. The thermostat normally displays room temperature and mode of operation.

The temperature can be set by up/down buttons for both cooling and heating cycles. The thermostat also allows you to select continuous fan operation, or have the fan on intermittent operation with the equipment.

The thermostat is best located about 1500 mm (5 Ft.) above floor level, on a **partition wall** (not an outside wall), and should not be exposed to direct light from lamps, sun etc. It should be in return air stream, away from supply air registers/diffusers.

- Single/dual stage - Cooling & heating.
- Low voltage control - 24 VAC (nominal).
- Room temperature display - in °C or °F.
- Mode of operation - FAN/COOL/HEAT/AUTO.
- Fan mode - ON: Continuous fan operation; AUTO: Fan operates ON/OFF with compressor.
- Heating & cooling setpoint is permissible.
- Temperature set button - Up for increasing & down for decreasing temperature.
- Built-in compressor fault & clogged filter indication led lights.
- Remote sensing function as an option. Duct sensor is provided with the thermostat.

TYPICAL THERMOSTAT

Part No.	Heating Stages	Cooling Stages	Selector Switch Positions	
			Mode Switch	Fan Switch
800-652-62	1 & 2	1 & 2	OFF-HEAT/COOL	ON - AUTO

E. Under Voltage Monitors (UVM)

UVM combines voltage monitoring, phase loss, reversal and imbalance. When the voltage drops below safe limits, the control relays turn off the equipment. When the device sensed such faults, it will cut-off the supply in the control circuit thereby cutting off power to the motors. The voltage monitor will re-set automatically when power is brought back to it's normal conditions.

LINE VOLTAGE RANGE	TRIP & RE-SET VOLTAGE (% OF SET POINT)					
	UNDER VOLTAGE		OVER VOLTAGE		PHASE IMBALANCE	
	TRIP	RE-SET	TRIP	RE-SET	TRIP	RE-SET
190 - 480 VAC	90%	93%	110%	107%	6%	4.5%

STANDARD FEATURES/OPTIONS/ACCESSORIES

DESCRIPTION	STANDARD FEATURES	OPTION (FACTORY INSTALLED)	ACCESSORY (FIELD INSTALLED)
Horizontal discharge	■		
Compressor crankcase heaters	■		
Evaporator fan–belt driven ⁽¹⁾	■		
Evaporator fan motor – ODP type (TEFC type optional) ⁽²⁾	■	■	
Condenser fan – direct drive, propeller type	■		
Condenser fan motor – totally enclosed air-over type	■		
Electric heaters		■	■
Filter drier	■		
Filter, synthetic media	■		
Filter, aluminum		■	
Compressor overload protection	■		
Low pressure switch	■		
High pressure switch		■	
Cooling & heating thermostat	■		
Condenser fan guard	■		
Condenser coil guard	■		
Manual outside air damper ⁽³⁾		■	■
Economizer		■	■
Enthalpy sensor			■

NOTES:

- (1) Direct drive motors for PQ036 to PQ060.
- (2) TEFC motors are available for PQ075 to PQ360.
- (3) Manual outside air damper is available for PQ075 to PQ360.

PHYSICAL DATA (DIRECT DRIVE MOTOR)

MODEL NUMBER		PQ036	PQ048	PQ060
NOMINAL CAPACITY, TONS (kW)		3 (10.5)	4 (14)	5 (17.6)
COMPRESSOR	Quantity	1	1	1
	Oil (oz)	40	70	70
	Refrigerant	R-22		
	Operating Charge (oz)	83	155	208
CONDENSER FAN	Type/Drive	Propeller/Direct		
	Quantity – Diameter (inch)	1 – 24	1 – 24	1 – 24
	Nominal CFM (L/S)	3200 (1510)	3000 (1415)	3000 (1415)
	Motor HP – RPM	1/3 – 1075	1/3 – 1075	1/3 – 1075
CONDENSER COIL	Type	Inner Grooved Tubes and Enhanced Fins		
	Tube dia. - Rows - Fins per inch	3/8-1-16	3/8-2-16	3/8-2-16
	Total face area, Sq. ft. (Sq. m.)	10.8 (1)	10.8 (1)	10.8 (1)
EVAPORATOR BLOWER	Type	Centrifugal		
	Size (inch)	10 x 8	10 x 8	10 x 8
	Drive type	Direct Drive		
	Nominal CFM (L/S)	1200 (566)	1600 (755)	1800 (850)
	Motor HP (Standard)	0.75	0.75	1
EVAPORATOR COIL	Type	Inner Grooved Tubes and Enhanced Fins		
	Tube dia. - Rows - Fins per inch	3/8-3-14	3/8-3-14	3/8-3-14
	Total face area, Sq. ft. (Sq. m.)	4.5 (0.42)	5.4 (0.5)	5.4 (0.5)
LOW PRESSURE SWITCH	Open	25 ± 5 PSIG		
	Close	50 ± 5 PSIG		
RETURN AIR FILTERS	Quantity	2	2	2
	Size (inch)	16 x 25	16 x 25	16 x 25
SHIPPING WEIGHT	Kgs.	197	213	215

NOTE: Direct drive motors have single speed connection only. Factory set at medium speed.

PHYSICAL DATA

MODEL NUMBER		PQ075	PQ090	PQ100	PQ120	PQ150	PQ180	PQ210	PQ240	PQ300	PQ360	
NOMINAL CAPACITY, TONS (kW)		6 (21)	7.5 (26.4)	8.5 (30)	10 (35)	12 (42)	15 (53)	17.5 (62)	20 (70.4)	25 (88)	30 (105)	
COMPRESSOR	Quantity	1	2	2	2	2	2	2	2	2	2	
	Oil (oz)	60	45 x 2	70 x 2	60 x 2	60 x 2	81 & 110	110 x 2	110 x 2	140 x 2	140 x 2	
	Refrigerant	R-22										
	Operating Charge (oz)	178	119 x 2	130 x 2	131 x 2	148 x 2	190 & 201	256 x 2	271 x 2	369 x 2	462 x 2	
CONDENSER FAN	Type/Drive	Propeller/Direct										
	Qty. - Diameter (inch)	1 - 26					2 - 26			2 - 30		
	Nominal CFM (L/S)	4800(2265)	5500(2595)	6000 (2830)			11000(5190)	10500(4950)	15000(7080)	14300(6750)	14700(6938)	
	Motor HP - RPM	1/3 - 850	3/4 - 950						1.5 - 950			
CONDENSER COIL	Type	Inner Grooved Tubes and Enhanced Fins										
	Tube dia. - Rows - Fins per inch	3/8-2-16				3/8-3-16	3/8-2-14	3/8-3-14	3/8-2-14	3/8-3-14		
	Total face area, Sq. ft. (Sq. m.)	14 (1.3)	16 (1.5)	20 (1.86)			30 (2.78)		38 (3.53)		48 (4)	
EVAPORATOR BLOWER	Type	Centrifugal										
	Size (inch)	12 x 12			15 x 15				18 x 18		20 x 18	
	Drive type	Belt										
	Nominal CFM (L/S)	2400(1135)	3000(1415)	3400(1605)	4000(1890)	4800(2265)	6000(2830)	7000(3300)	7500(3540)	9600(4530)	11250(5309)	
	Motor HP - Std. / Alt	1.5/2	2/3	2/3	3	3/5	5/7.5	5/7.5	7.5	7.5/10	10/15	
	Motor Frame (NEMA) Std./Alt.	56/56				56/184T	184T/213T		213T/215T		215T/254T	
	Fan RPM range	850-1310	850-1450	700-1290	735-1165	815-1175	725-1140	765-1140	665-1080	725-1080	692-1064	
	Factory setting full turns open	3	3	3	3	3	3	3	3	3	3	
	Fan pulley pitch dia.	4.6	4.6	5.6	6.1	6.6	7.4	7	9.4	8.6	9	
EVAPORATOR COIL	Type	Inner Grooved Tubes and Enhanced Fins										
	Tube dia. - Rows - Fins per inch	3/8-3-14					3/8-2-14	3/8-3-14			3/8-4-14	
	Total face area, Sq. ft. (Sq. m.)	6 (0.56)	9 (0.84)	10 (0.93)	12.5 (1.16)	12.5 (1.16)	19.5 (1.81)	19.5 (1.81)	22 (2.04)	27 (2.5)	27 (2.5)	
LOW PRESSURE SWITCH	Open	25 ± 5 PSIG										
	Close	50 ± 5 PSIG										
RETURN AIR FILTERS	Qty.	4					6			8		
	Size (inch)	16-1/2 x 18-3/8			18 x 24			18 x 18 (1) 18 x 24 (3) 24 x 24 (2)		12 x 24 (2) 24 x 24 (6)		
SHIPPING WEIGHT	Kgs.	337	366	441	445	450	800	840	975	1025	1323	

SELECTION PROCEDURE

1. Determine cooling and heating capacity requirements at design conditions

Data:

Condenser entering air temperature	: 95°F
Evaporator entering air temperature	: 80°F DB / 67°F WB
Evaporator airflow	: 7500 CFM
Required cooling capacity	: 235,000 BTUH
Sensible heat capacity	: 160,000 BTUH
Required heating capacity	: 20 kW
External static pressure	: 1.23 INCH WG.
Power supply (V-Ph-Hz)	: 380/415-3-50

2. Unit selection based on required cooling capacity

Enter cooling capacity performance data at condenser entering air temp. at 95°F and evaporator entering air temp. 80°F DB, 67°F WB, 7500 CFM airflow. The PQ240 unit will give 245,800 BTUH cooling capacity (gross) and 179,200 BTUH sensible heat capacity (gross).

3. Electric heater selection

Heating capacity required = 20 kW.
 Enter electric heating table for PQ240 at 380/415-3-50 power supply.
 20 kW heater at 380/415 volts satisfies the required heating.

4. Determine fan speed and power requirements at design conditions

Before entering the fan performance tables, calculate the summation of external static pressure for the required components as follows.

External static pressure	: 1.23 INCH WG.
Electric heater	: 0.17 INCH WG.
	<hr style="width: 50%; margin: 0 auto;"/>
	1.4 INCH WG.

Enter fan performance table for PQ240 model. For 7500 CFM and external static pressure of 1.4 INCH WG, it requires 911 RPM and 4.45 brake horse power (BHP) wherein the standard motor will meet job requirements.

5. Determine input power to motor

Use fan motor efficiency table.

$$\text{Blower motor watts} = \frac{\text{BHP} \times 746 \text{ watts}}{\text{Motor efficiency}} = \frac{4.45 \times 746}{0.81} = 4098 \text{ watts.}$$

6. Determine net capacities

Above capacities are gross and do not include blower motor heat gain.

Determine net capacities as follows:

Net cooling capacity	= Gross cooling capacity – blower motor heat = 245,800 – (4098 WATTS x 3.413 BTUH/WATTS) = 231,813 BTUH
Net sensible capacity	= 179,200 – (4098 WATTS x 3.413 BTUH/WATTS) = 165,213 BTUH

7. Altitude correction factors for cooling capacity

ALTITUDE, FT.		2000	4000	6000	8000	10000
FACTOR	Total capacity	0.98	0.96	0.93	0.90	0.88
	Sensible capacity	0.93	0.86	0.80	0.75	0.70

COOLING CAPACITIES

Model No.: PQ036

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		1125/0.104			1225/0.111			1350/0.119		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	33.68	36.77	40.10	34.27	37.39	40.82	34.9	38.1	41.6
	SC	31.69	26.21	20.65	33.05	27.42	21.44	33.7	28.9	22.4
	kW	3.49	3.64	3.79	3.58	3.72	3.87	3.7	3.8	4.0
95	TC	31.72	34.73	37.97	32.24	35.32	38.65	32.8	35.9	39.3
	SC	30.75	25.57	20.02	31.26	26.79	20.83	31.8	28.3	21.8
	kW	3.65	3.81	3.99	3.73	3.89	4.08	3.8	4.0	4.2
105	TC	29.66	32.53	35.59	30.16	33.09	36.22	30.7	33.7	37.0
	SC	28.04	24.13	18.74	28.51	25.32	19.52	29.0	26.8	20.5
	kW	3.85	4.03	4.23	3.93	4.11	4.32	4.1	4.2	4.4
115	TC	27.30	30.04	32.93	27.76	30.54	33.53	28.3	31.1	34.2
	SC	25.68	23.12	17.79	26.11	24.29	18.57	26.6	25.7	19.5
	kW	4.01	4.21	4.44	4.09	4.30	4.53	4.2	4.4	4.7
125	TC	26.08	28.68	31.52	26.47	29.21	32.10	26.9	29.7	32.7
	SC	24.35	22.46	17.22	24.73	23.67	18.00	25.2	25.1	18.9
	kW	4.19	4.41	4.67	4.27	4.50	4.76	4.4	4.6	4.9

Model No.: PQ048

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		1275/0.099			1450/0.108			1650/0.119		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	44.61	48.75	53.20	45.9	50.2	54.9	47.1	51.6	56.4
	SC	40.93	34.30	27.57	44.1	36.7	29.2	46.2	39.2	30.8
	kW	5.32	5.55	5.77	5.5	5.7	5.9	5.6	5.9	6.1
95	TC	42.39	46.43	50.78	43.6	47.8	52.3	44.7	49.1	53.8
	SC	39.83	33.28	26.63	43.0	35.7	28.2	43.8	38.2	29.8
	kW	5.36	5.62	5.88	5.5	5.8	6.0	5.7	5.9	6.2
105	TC	40.00	43.89	48.09	41.1	45.1	49.5	42.1	46.4	50.9
	SC	38.94	32.40	25.76	40.3	34.7	27.3	41.3	37.3	29.0
	kW	5.56	5.85	6.15	5.7	6.0	6.3	5.9	6.2	6.5
115	TC	37.50	41.18	45.17	38.5	42.4	46.5	39.5	43.4	47.7
	SC	36.75	31.43	24.80	37.7	33.8	26.3	38.7	36.3	28.0
	kW	5.75	6.07	6.39	5.9	6.2	6.6	6.1	6.4	6.8
125	TC	35.06	38.53	42.37	36.0	39.7	43.6	36.9	40.6	44.7
	SC	34.35	30.38	23.81	35.3	32.7	25.3	36.1	35.2	27.0
	kW	5.89	6.22	6.58	6.0	6.4	6.8	6.2	6.6	7.0

Model No.: PQ060

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		1600/0.117			1800/0.128			2000/0.139		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	54.6	59.8	65.5	55.8	61.3	67.1	57.0	62.5	68.5
	SC	47.0	39.4	31.7	50.1	41.7	33.2	53.2	44.0	34.7
	kW	6.4	6.7	7.0	6.7	6.9	7.2	6.8	7.1	7.4
95	TC	51.7	56.7	62.3	52.9	58.1	63.8	53.9	59.2	65.1
	SC	45.8	38.3	30.7	48.9	40.6	32.2	51.4	42.8	33.6
	kW	6.8	7.1	7.4	7.0	7.3	7.7	7.2	7.5	7.9
105	TC	49.1	54.0	59.2	50.2	55.3	60.7	51.2	56.3	61.9
	SC	44.7	37.2	29.6	47.9	39.6	31.2	48.8	41.8	32.6
	kW	7.0	7.4	7.8	7.3	7.6	8.0	7.4	7.8	8.2
115	TC	44.3	48.8	53.7	45.3	49.9	54.9	46.2	50.9	56.0
	SC	41.5	34.6	27.2	42.4	36.9	28.7	43.2	39.1	30.1
	kW	7.1	7.5	7.9	7.3	7.7	8.1	7.5	7.9	8.3
125	TC	41.5	45.7	50.3	42.4	46.7	51.4	43.1	47.6	52.5
	SC	38.8	33.5	26.1	39.7	35.8	27.6	40.4	37.9	29.0
	kW	7.4	7.8	8.2	7.6	8.0	8.5	7.8	8.2	8.7

TC - Total Capacity (1000 Btuh) Gross
SC - Sensible Heat Capacity (1000 Btuh) G

kW - Total unit power input
DR - Wet Bulb depression ratio

DBE - Dry Bulb Temp. (°F) of Air Entering Coil
WBE - Wet Bulb Temp. (°F) of Air Entering Coil

DBL - Dry Bulb Temp. (°F) of Air Leaving Coil
WBL - Wet Bulb Temp. (°F) of Air Leaving Coil

- NOTES:** 1. Direct interpolation is permissible - Do not extrapolate.
2. Capacities above are based on DBE = 80°F. For higher or lower DBE, add following Correction Factor to Sensible Capacity = 1.08 x CFM (1 - DR) (DBE - 80).
3. To calculate leaving conditions, follow this procedure: DBL = DBE - (Sensible Capacity / 1.08 x CFM); WBL = DBL - [DR (DBE - WBE)].
4. Total unit power input at 0.15 ESP for PQ036/PQ048 & 0.2 ESP for PQ060.

COOLING CAPACITIES

Model No.: PQ075

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		1900/0.11			2400/0.131			2900/0.153		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	67.31	73.56	80.26	70.59	77.20	84.41	72.91	79.83	87.38
	SC	58.40	49.06	39.55	66.54	55.09	43.54	71.04	60.67	47.13
	kW	7.18	7.57	7.98	7.56	7.96	8.39	8.02	8.42	8.88
95	TC	64.41	70.51	77.06	67.45	73.98	81.00	69.63	76.44	83.75
	SC	57.18	47.90	38.45	65.28	53.95	42.42	67.93	59.51	45.98
	kW	7.66	8.08	8.55	8.04	8.48	8.97	8.50	8.95	9.48
105	TC	60.35	66.06	72.31	63.06	69.19	75.93	65.08	71.54	78.50
	SC	55.20	45.94	36.60	61.26	51.89	40.53	63.22	57.47	44.08
	kW	8.17	8.64	9.16	8.56	9.04	9.60	9.02	9.52	10.12
115	TC	57.29	62.77	68.71	59.82	65.65	72.10	61.66	67.76	74.50
	SC	54.00	44.76	35.42	58.21	50.68	39.33	60.01	56.19	42.86
	kW	8.72	9.24	9.82	9.13	9.66	10.28	9.60	10.15	10.81
125	TC	53.98	59.22	64.86	56.37	61.91	68.07	58.00	63.87	70.25
	SC	52.66	43.51	34.17	54.99	49.43	38.10	56.59	54.94	41.60
	kW	9.34	9.91	10.54	9.75	10.34	11.03	10.23	10.84	11.58

Model No.: PQ090

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		2400/0.108			3000/0.128			3600/0.148		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	81.3	89.5	98.6	85.2	94.2	103.8	88.2	97.5	107.7
	SC	73.4	61.6	49.8	83.4	69.2	54.8	87.3	76.2	59.3
	kW	8.6	9.0	9.5	9.1	9.5	10.0	9.7	10.1	10.6
95	TC	77.7	85.9	94.9	81.6	90.3	100.0	84.2	93.5	103.7
	SC	71.9	60.3	48.5	80.9	67.8	53.5	83.5	74.7	58.1
	kW	9.1	9.5	10.1	9.6	10.1	10.6	10.2	10.7	11.3
105	TC	70.1	77.6	85.9	73.5	81.6	90.4	75.9	84.4	93.7
	SC	67.1	55.8	44.4	71.3	63.2	49.2	73.7	70.0	53.6
	kW	9.6	10.2	10.7	10.1	10.7	11.3	10.8	11.3	12.0
115	TC	66.3	73.7	81.6	69.4	77.3	85.9	71.7	79.9	89.1
	SC	64.6	54.5	43.0	67.6	61.7	47.9	69.8	68.5	52.3
	kW	10.3	10.8	11.5	10.8	11.4	12.1	11.4	12.1	12.8
125	TC	62.3	69.4	77.0	65.2	72.8	81.1	67.5	75.2	84.0
	SC	60.8	52.9	41.5	63.6	60.2	46.4	65.7	66.9	50.7
	kW	11.0	11.6	12.4	11.5	12.2	13.0	12.2	12.9	13.7

Model No.: PQ100

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		2700/0.109			3400/0.13			4100/0.151		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	94.8	103.9	113.7	99.7	109.5	120.0	103.3	113.4	124.6
	SC	84.9	71.4	57.6	96.7	80.3	63.6	101.2	88.4	68.9
	kW	9.7	10.2	10.7	10.1	10.6	11.1	10.7	11.2	11.7
95	TC	90.0	98.9	108.4	94.7	104.1	114.3	97.9	107.7	118.6
	SC	82.8	69.4	55.7	92.8	78.2	61.6	95.9	86.3	66.9
	kW	10.1	10.7	11.3	10.6	11.1	11.7	11.1	11.7	12.3
105	TC	84.9	93.4	102.4	89.2	98.2	108.0	92.2	101.7	111.9
	SC	80.9	67.5	53.8	87.4	76.3	59.7	90.3	84.5	64.9
	kW	10.6	11.2	11.8	11.0	11.6	12.2	11.6	12.2	12.8
115	TC	79.8	87.7	96.3	83.6	92.1	101.4	86.3	95.3	105.0
	SC	78.9	65.4	51.7	81.9	74.2	57.6	84.6	82.3	62.8
	kW	10.9	11.6	12.2	11.3	12.0	12.7	11.9	12.6	13.4
125	TC	74.5	81.8	90.0	77.9	85.9	94.7	80.4	88.9	98.1
	SC	73.0	63.2	49.6	76.4	72.0	55.4	78.8	80.1	60.7
	kW	11.2	11.9	12.7	11.7	12.4	13.2	12.3	13.0	13.8

TC - Total Capacity (1000 Btu/h) Gross kW - Total unit power input DBE - Dry Bulb Temp. (°F) of Air Entering Coil DBL - Dry Bulb Temp. (°F) of Air Leaving Coil
 SC - Sensible Heat Capacity (1000 Btu/h) Gross DR - Wet Bulb depression ratio WBE - Wet Bulb Temp. (°F) of Air Entering Coil WBL - Wet Bulb Temp. (°F) of Air Leaving Coil

- NOTES:** 1. Direct interpolation is permissible - Do not extrapolate.
 2. Capacities above are based on DBE = 80°F. For higher or lower DBE, add following Correction Factor to Sensible Capacity = 1.08 x CFM (1 - DR) (DBE - 80).
 3. To calculate leaving conditions, follow this procedure: DBL = DBE - (Sensible Capacity (Btu/h) / 1.08 x CFM); WBL = DBL - [DR (DBE - WBE)].
 4. Total unit power input based on nominal CFM & 0.25 ESP.

COOLING CAPACITIES

Model No.: PQ120

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		3200/0.105			4000/0.124			4800/0.143		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	109.7	120.0	131.0	114.9	125.9	137.8	118.6	130.1	142.6
	SC	98.5	82.5	66.2	111.9	92.5	72.8	117.2	101.7	78.8
	kW	11.8	12.4	13.1	12.4	13.1	13.8	13.2	13.8	14.6
95	TC	104.9	114.7	125.5	109.6	120.2	131.9	112.9	124.2	136.3
	SC	96.1	80.2	64.1	108.2	90.1	70.7	111.5	99.4	76.6
	kW	12.4	13.1	13.9	13.1	13.8	14.6	13.8	14.6	15.4
105	TC	99.4	108.9	119.2	103.9	113.9	125.0	107.1	117.6	129.3
	SC	94.1	78.2	62.0	102.8	88.0	68.5	106.0	97.2	74.5
	kW	13.0	13.8	14.6	13.7	14.4	15.3	14.4	15.2	16.2
115	TC	94.0	102.9	112.8	98.1	107.7	118.3	101.0	111.1	122.3
	SC	91.7	75.8	59.8	97.2	85.7	66.3	100.0	94.9	72.3
	kW	13.6	14.4	15.3	14.3	15.1	16.1	15.0	15.9	16.9
125	TC	88.7	97.1	106.5	92.6	101.6	111.6	95.2	104.7	115.2
	SC	88.0	73.7	57.7	91.8	83.6	64.2	94.4	92.7	70.1
	kW	14.2	15.0	16.0	14.8	15.7	16.7	15.6	16.5	17.6

Model No.: PQ150

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		3800/0.119			4800/0.143			5800/0.167		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	132.0	144.3	157.7	137.8	151.1	165.3	142.0	155.9	171.0
	SC	118.3	99.3	80.0	134.3	111.3	87.8	139.2	122.2	95.0
	kW	14.0	14.8	15.6	14.9	15.7	16.6	16.1	16.9	17.8
95	TC	125.8	137.9	150.9	131.4	144.2	158.1	135.2	148.6	163.3
	SC	115.7	96.9	77.7	128.7	108.8	85.5	132.5	119.7	92.6
	kW	15.0	15.8	16.7	15.9	16.8	17.7	17.1	18.0	19.0
105	TC	123.0	134.8	147.6	128.4	140.9	154.6	132.2	145.1	159.5
	SC	113.2	94.5	75.6	127.6	106.3	83.3	131.3	117.0	90.3
	kW	16.0	16.9	17.9	17.0	17.9	19.0	18.2	19.1	20.3
115	TC	112.9	123.7	135.6	117.8	129.2	141.7	121.1	133.0	146.3
	SC	110.8	91.8	72.7	115.4	103.8	80.4	118.6	114.7	87.5
	kW	17.1	18.1	19.3	18.1	19.2	20.4	19.3	20.4	21.7
125	TC	106.1	116.5	127.6	110.6	121.5	133.5	113.7	125.0	137.8
	SC	104.0	89.2	70.0	108.4	101.2	77.8	111.5	112.0	85.0
	kW	18.4	19.5	20.7	19.4	20.6	21.9	20.6	21.8	23.2

Model No.: PQ180

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		4800/0.177			6000/0.22			7200/0.264		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	162.7	179.2	196.6	170.5	187.8	206.1	176.0	193.8	213.2
	SC	142.6	120.6	98.0	158.5	132.5	105.9	171.8	142.3	112.5
	kW	17.4	18.4	19.4	18.7	19.7	20.7	20.2	21.2	22.3
95	TC	156.0	171.7	188.7	163.1	180.0	197.8	168.5	186.0	204.5
	SC	138.1	116.3	94.1	153.7	128.1	101.9	166.9	138.0	108.3
	kW	18.4	19.5	20.6	19.7	20.8	21.9	21.2	22.3	23.5
105	TC	146.6	161.7	177.9	153.5	169.3	186.5	158.4	174.8	192.7
	SC	132.5	111.0	89.2	148.0	122.6	96.9	155.9	132.2	103.3
	kW	19.2	20.5	21.7	20.6	21.8	23.0	22.1	23.3	24.6
115	TC	138.0	152.3	167.6	144.3	159.5	175.6	148.7	164.5	181.6
	SC	126.6	105.6	84.1	139.5	116.9	91.6	143.8	126.3	97.9
	kW	20.2	21.5	22.8	21.6	22.9	24.2	23.1	24.4	25.8
125	TC	129.1	142.8	157.2	134.9	149.3	164.7	139.0	154.2	170.4
	SC	123.1	102.2	80.8	130.7	113.4	88.3	134.6	123.0	94.6
	kW	21.3	22.7	24.1	22.6	24.0	25.5	24.2	25.6	27.1

TC - Total Capacity (1000 Btuh) Gross kW - Total unit power input DBE - Dry Bulb Temp. (°F) of Air Entering Coil DBL - Dry Bulb Temp. (°F) of Air Leaving Coil
 SC - Sensible Heat Capacity (1000 Btuh) Gross DR - Wet Bulb depression ratio WBE - Wet Bulb Temp. (°F) of Air Entering Coil WBL - Wet Bulb Temp. (°F) of Air Leaving Coil

- NOTES:** 1. Direct interpolation is permissible - Do not extrapolate.
 2. Capacities above are based on DBE = 80°F. For higher or lower DBE, add following Correction Factor to Sensible Capacity = 1.08 x CFM (1 - DR) (DBE - 80).
 3. To calculate leaving conditions, follow this procedure: DBL = DBE - (Sensible Capacity (Btuh) / 1.08 x CFM); WBL = DBL - [DR (DBE - WBE)].
 4. Total unit power input based on nominal CFM & 0.35 ESP.

COOLING CAPACITIES

Model No.: PQ210

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		5800/0.117			7000/0.136			8200/0.154		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	190.8	209.5	229.5	198.0	217.6	239.0	203.7	224.0	246.4
	SC	171.8	143.8	115.3	190.9	158.1	124.8	199.3	171.5	133.5
	kW	22.7	23.8	25.0	24.2	25.4	26.6	25.7	26.9	28.2
95	TC	181.0	198.9	218.5	187.9	206.7	227.2	192.9	212.6	234.0
	SC	167.5	139.6	111.4	183.9	153.9	120.8	188.8	167.3	129.4
	kW	23.6	24.9	26.2	25.2	26.5	27.9	26.7	28.0	29.5
105	TC	169.3	186.1	204.8	175.4	193.3	213.0	180.1	198.7	219.1
	SC	161.9	134.1	106.2	171.0	148.4	115.6	175.6	161.6	124.1
	kW	24.5	25.9	27.4	26.1	27.5	29.0	27.7	29.1	30.7
115	TC	157.2	173.3	190.8	162.9	180.0	198.2	167.2	184.9	203.9
	SC	152.6	128.7	101.0	158.1	142.9	110.2	162.4	156.0	118.7
	kW	25.4	26.9	28.5	27.0	28.5	30.2	28.5	30.1	31.9
125	TC	146.8	161.9	178.5	151.9	168.1	185.6	155.8	172.4	190.9
	SC	142.7	124.6	97.0	147.6	138.8	106.2	151.4	151.6	114.6
	kW	26.2	27.7	29.5	27.8	29.4	31.2	29.4	31.0	32.9

Model No.: PQ240

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		6000/0.095			7500/0.112			9000/0.128		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	223.5	245.3	268.7	235.6	258.8	284.5	243.9	268.8	296.0
	SC	194.0	163.9	133.2	220.5	183.7	146.7	241.3	202.2	158.9
	kW	24.4	25.5	26.7	25.5	26.7	28.0	26.9	28.1	29.5
95	TC	212.0	233.1	256.0	223.2	245.8	270.9	231.0	255.2	281.3
	SC	189.4	159.4	129.0	215.8	179.2	142.4	229.3	197.7	154.3
	kW	25.8	27.1	28.5	27.0	28.3	29.8	28.4	29.8	31.4
105	TC	200.5	220.8	242.8	210.8	232.8	256.7	218.0	241.1	266.5
	SC	184.1	154.4	124.1	209.2	174.1	137.4	216.4	192.2	149.3
	kW	27.2	28.6	30.2	28.4	29.9	31.6	29.9	31.4	33.3
115	TC	188.5	207.8	228.9	198.0	218.8	241.5	204.7	226.7	251.0
	SC	179.4	149.7	119.5	197.2	169.3	132.5	203.8	187.5	144.6
	kW	28.7	30.3	32.0	29.9	31.6	33.5	31.4	33.2	35.2
125	TC	175.7	193.8	213.6	184.3	203.9	225.7	190.2	211.1	233.9
	SC	174.2	144.4	114.2	183.9	163.9	127.4	189.7	182.1	139.1
	kW	30.2	31.9	33.9	31.5	33.3	35.5	33.0	34.9	37.2

Model No.: PQ300

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		8000/0.117			9600/0.135			11200/0.153		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	267.0	293.4	322.4	276.5	304.7	334.8	284.0	312.7	344.7
	SC	245.6	206.0	166.0	271.9	225.8	178.7	278.4	243.9	190.8
	kW	28.5	29.9	31.4	30.1	31.5	33.0	32.0	33.4	35.0
95	TC	254.1	279.9	307.6	263.1	290.1	319.5	269.9	297.6	328.8
	SC	240.3	201.0	160.8	257.9	220.5	173.7	264.5	238.6	185.6
	kW	30.4	32.0	33.6	32.0	33.6	35.4	33.9	35.5	37.4
105	TC	240.2	264.6	291.4	248.5	274.3	302.5	254.8	281.6	311.4
	SC	234.8	195.3	155.4	243.5	214.9	168.2	249.7	233.3	180.3
	kW	32.4	34.1	36.1	34.0	35.8	37.9	36.0	37.8	39.9
115	TC	224.8	248.0	273.5	232.2	256.8	283.9	238.2	263.7	291.6
	SC	220.3	188.9	149.1	227.5	208.4	161.9	233.4	226.7	173.6
	kW	34.4	36.4	38.6	36.1	38.1	40.4	38.1	40.1	42.5
125	TC	207.8	229.6	253.8	214.6	237.6	263.2	219.6	243.8	270.3
	SC	203.6	182.2	142.6	210.3	201.6	155.3	215.2	219.8	167.0
	kW	36.5	38.7	41.2	38.2	40.5	43.1	40.2	42.5	45.2

TC - Total Capacity (1000 Btu/h) Gross kW - Total unit power input DBE - Dry Bulb Temp. (°F) of Air Entering Coil DBL - Dry Bulb Temp. (°F) of Air Leaving Coil
 SC - Sensible Heat Capacity (1000 Btu/h) Gross DR - Wet Bulb depression ratio WBE - Wet Bulb Temp. (°F) of Air Entering Coil WBL - Wet Bulb Temp. (°F) of Air Leaving Coil

- NOTES:** 1. Direct interpolation is permissible - Do not extrapolate.
 2. Capacities above are based on DBE = 80°F. For higher or lower DBE, add following Correction Factor to Sensible Capacity = 1.08 x CFM (1 - DR) (DBE - 80).
 3. To calculate leaving conditions, follow this procedure: DBL = DBE - (Sensible Capacity (Btu/h) / 1.08 x CFM); WBL = DBL - [DR (DBE - WBE)].
 4. Total unit power input based on nominal CFM & 0.35 ESP.

COOLING CAPACITIES

Model No.: PQ360

CONDENSER ENTERING AIR TEMP. (°F)		EVAPORATOR AIRFLOW, CFM/DR								
		9600/0.066			11250/0.078			12500/0.088		
		EVAPORATOR ENTERING AIR, WBE (°F)								
		62	67	72	62	67	72	62	67	72
85	TC	303.69	330.03	357.93	311.27	338.48	368.05	315.90	344.11	373.92
	SC	276.69	228.32	179.12	289.49	248.05	192.00	293.79	262.89	201.19
	kW	32.15	32.6	33.2	33.48	33.96	34.65	34.6	35.08	35.85
95	TC	297.83	323.79	351.72	305.39	332.14	361.26	309.91	337.61	367.46
	SC	271.38	223.56	175.20	280.96	243.17	187.77	285.12	257.83	197.11
	kW	33.79	34.28	34.93	35.13	35.64	36.39	36.24	36.77	37.59
105	TC	286.54	311.72	338.90	293.63	319.94	348.17	297.93	325.14	353.99
	SC	257.88	214.33	167.26	264.26	233.69	179.62	268.14	248.00	188.70
	kW	35.59	36.12	36.83	36.93	37.48	38.29	38.04	38.61	39.5
115	TC	279.01	303.82	330.62	285.78	311.65	339.44	290.31	316.47	344.83
	SC	248.32	209.22	162.85	254.35	228.27	174.99	258.37	242.26	183.82
	kW	37.31	37.88	38.64	38.64	39.23	40.11	39.75	40.36	41.31
125	TC	271.06	295.49	321.52	277.94	302.87	330.23	281.59	307.80	335.67
	SC	241.24	206.39	159.99	247.37	225.31	172.22	250.62	239.51	181.19
	kW	39.75	40.37	41.21	41.08	41.73	42.68	42.18	42.85	43.9

TC - Total Capacity (1000 Btuh) Gross kW - Total unit power input DBE - Dry Bulb Temp. (°F) of Air Entering Coil DBL - Dry Bulb Temp. (°F) of Air Leaving Coil
 SC - Sensible Heat Capacity (1000 Btuh) Gross DR - Wet Bulb depression ratio WBE - Wet Bulb Temp. (°F) of Air Entering Coil WBL - Wet Bulb Temp. (°F) of Air Leaving Coil

- NOTES:**
1. Direct interpolation is permissible - Do not extrapolate.
 2. Capacities above are based on DBE = 80°F. For higher or lower DBE, add following Correction Factor to Sensible Capacity = 1.08 x CFM (1 - DR) (DBE - 80).
 3. To calculate leaving conditions, follow this procedure: DBL = DBE - (Sensible Capacity (Btuh) / 1.08 x CFM); WBL = DBL - [DR (DBE - WBE)].
 4. Total unit power input based on nominal CFM & 0.55 ESP.

ELECTRICAL DATA

MODELS: PQ036 - PQ060

MODEL NUMBER	POWER SUPPLY (V-Ph-Hz)	VOLTAGE RANGE		FM	COMPRESSOR			BLOWER MOTOR		ELECTRIC HEATER		MCA	MOCP
		MIN.	MAX.		FLA	RLA	LRA	HP	FLA	kW	FLA		
PQ036	380/415-3-50 (4 WIRE)	342	457	2.3	5.9	42	0.75	5.5	-	-	15.2	20	
									5	7.6	16.4	20	
									7.5	11.4	21.1	25	
PQ048	380/415-3-50 (4 WIRE)	342	457	2.3	10.4	55	0.75	5.5	-	-	20.8	30	
									5	7.6	20.8	30	
									7.5	11.4	21.1	30	
PQ060	380/415-3-50 (4 WIRE)	342	457	2.3	9.6	65	1	7.8	-	-	22.1	30	
									5	7.6	22.1	30	
									7.5	11.4	24	30	
									10*	15.2	28.8	30	

LEGEND:

- FLA** - Full Load Amps
- HP** - Horse Power
- BM** - Blower Motor
- LRA** - Locked Rotor Amps
- RLA** - Rated Load Amps
- MCA** - Minimum Circuit Amps
- MOCP** - Maximum Over Current Protection
- FM** - Fan Motor (Condenser)
- *Combination of heater modules

MODELS: PQ075 & PQ090

DESCRIPTION				MODEL NUMBER															
				PQ075						PQ090									
POWER SUPPLY (V-Ph-Hz)	VOLTAGE RANGE		FM	COMPRESSOR (each)		BM		ELECTRIC HEATER		MCA	MOCP	COMPRESSOR (each)		BM		ELECTRIC HEATER		MCA	MOCP
	Min.	Max.		FLA	RLA	LRA	HP	FLA	Nom. kW			FLA	RLA	LRA	HP	FLA	Nom. kW		
380/415-3-50 (4 WIRE)	342	457	2.6 (1.9 FOR PQ090)	12	101	1.5 (STD)	3.4	-	-	21	30	8.2	50	-	-	24	30		
								5/6	7.6/9.1	21/21	30/30			5/6	7.6/9.1	24/24	30/30		
								7.5/10	11.4/15.2	21/23.3	30/30			7.5/10	11.4/15.2	24/24	30/30		
								10*/12*	15.2/18.2	23.3/27	30/30			10*/12*	15.2/18.2	24/27.3	30/30		
								15*	22.8	32.8	35			15*/20*	22.8/30.4	33/42.5	35/45		
														25*/30*	38/45.6	52/61.5	60/70		
								-	-	21.2	30			-	-	25.1	30		
								5/6	7.6/9.1	21.2/21.2	30/30			5/6	7.6/9.1	25.1/25.1	30/30		
								7.5/10	11.4/15.2	21.2/23.5	30/30			7.5/10	11.4/15.2	25.1/25.1	30/30		
								10*/12*	15.2/18.2	23.5/27.3	30/30			10*/12*	15.2/18.2	25.1/28.6	30/30		
								15*	22.8	33	35			15*/20*	22.8/30.4	34.4/43.9	35/45		
														25*/30*	38/45.6	53.4/62.9	60/70		

MODELS: PQ100 & PQ120

DESCRIPTION				MODEL NUMBER															
				PQ100						PQ120									
POWER SUPPLY (V-Ph-Hz)	VOLTAGE RANGE		FM	COMPRESSOR (each)		BM		ELECTRIC HEATER		MCA	MOCP	COMPRESSOR (each)		BM		ELECTRIC HEATER		MCA	MOCP
	Min.	Max.		FLA	RLA	LRA	HP	FLA	Nom. kW			FLA	RLA	LRA	HP	FLA	Nom. kW		
380/415-3-50 (4 WIRE)	342	457	1.9	10.4	55	2	3.6	-	-	28.9	35	10	74	-	-	29.1	35		
								5/6	7.6/9.1	28.9/28.9	35/35			5/6	7.6/9.1	29.1/29.1	35/35		
								7.5/10	11.4/15.2	28.9/28.9	35/35			7.5/10	11.4/15.2	29.1/29.1	35/35		
								10*/12*	15.2/18.2	28.9/28.9	35/35			10*/12*	15.2/18.2	29.1/29.1	35/35		
								15*/20*	22.8/30.4	33/42.5	35/45			15*/20*	22.8/30.4	34.4/43.9	35/45		
								25*/30*	38/45.6	52/61.5	60/70			25*/30*	38/45.6	53.4/62.9	60/70		
								-	-	30	40			-	-	33.6	40		
								5/6	7.6/9.1	30/30	40/40			5/6	7.6/9.1	33.6/33.6	40/40		
								7.5/10	11.4/15.2	30/30	40/40			7.5/10	11.4/15.2	33.6/33.6	40/40		
								10*/12*	15.2/18.2	30/30	40/40			10*/12*	15.2/18.2	33.6/34.3	40/40		
								15*/20*	22.8/30.4	34.4/43.9	40/45			15*/20*	22.8/30.4	40/49.5	40/50		
								25*/30*	38/45.6	53.4/62.9	60/70			25*/30*	38/45.6	59/68.5	60/70		

ELECTRICAL DATA

MODELS: PQ150 & PQ180

DESCRIPTION				MODEL NUMBER																	
				PQ150							PQ180										
POWER SUPPLY (V-Ph-Hz)	VOLTAGE RANGE		FM (each) (1 for PQ150 & 2 for PQ180)	COMPR-ESSOR (each)		BM		ELECTRIC HEATER		MCA	MOCP	COMPR-ESSOR (each)		BM		ELECTRIC HEATER		MCA	MOCP		
	Min.	Max.	FLA	RLA	LRA	HP	FLA	Nom. kW	FLA			RLA	LRA	HP	FLA	Nom. kW	FLA				
380/415-3-50 (4 WIRE)	342	457	1.9	12	101	3 (STD)	4.7	-	-	33.6	45	17.3 & 16.4	111 & 95	5 (STD)	9.2	-	-	51	60		
								5/6	7.6/9.1	33.6/33.6	45/45					10*/12*	15.2/18.2	51/51	60/60		
								7.5/10	11.4/15.2	33.6/33.6	45/45					15*/20*	22.8/30.4	51/51	60/60		
								10*/12*	15.2/18.2	33.6/33.6	45/45					25*/30*	38/45.6	59/68.5	60/70		
								15*/20*	22.8/30.4	34.4/43.9	45/45										
						25*/30*	38/45.6	53.4/62.9	60/70												
						5 (ALT.)	9.2	-	-	38.1	50	7.5 (ALT.)	13	-	-	54.8	70	10*/12*	15.2/18.2	54.8/54.8	70/70
								5/6	7.6/9.1	38.1/38.1	50/50			15*/20*	22.8/30.4	54.8/54.8	70/70				
								7.5/10	11.4/15.2	38.1/38.1	50/50			25*/30*	38/45.6	63.8/73.3	70/80				
								10*/12*	15.2/18.2	38.1/38.1	50/50										
15*/20*	22.8/30.4	40/49.5	50/50																		
25*/30*	38/45.6	59/68.5	60/70																		

MODELS: PQ210 & PQ240

DESCRIPTION				MODEL NUMBER																	
				PQ210							PQ240										
POWER SUPPLY (V-Ph-Hz)	VOLTAGE RANGE		FM (each)	COMPR-ESSOR (each)		BM		ELECTRIC HEATER		MCA	MOCP	COMPR-ESSOR (each)		BM		ELECTRIC HEATER		MCA	MOCP		
	Min.	Max.	FLA	RLA	LRA	HP	FLA	Nom. kW	FLA			RLA	LRA	HP	FLA	Nom. kW	FLA				
380/415-3-50 (4 WIRE)	342	457	1.9 (2.9 FOR PQ240)	19.2	125	5 (STD)	9.2	-	-	56.2	70	19.6	118	7.5 (STD)	13	-	-	62.9	80		
								10*/12*	15.2/18.2	56.2/56.2	70/70					10*/12*	15.2/18.2	62.9/62.9	80/80		
								15*/20*	22.8/30.4	56.2/56.2	70/70					15*/20*	22.8/30.4	62.9/62.9	80/80		
								25*/30*	38/45.6	59/68.5	70/70					25*/30*	38/45.6	63.8/73.3	80/80		
								35*/40*	53.2/60.8	82.8/92.3	90/100										
						7.5 (ALT.)	13	-	-	60	70	10 (ALT.)	15.1	-	-	65	80	10*/12*	15.2/18.2	65/65	80/80
								10*/12*	15.2/18.2	60/60	70/70			15*/20*	22.8/30.4	65/65	80/80				
								15*/20*	22.8/30.4	60/60	70/70			25*/30*	38/45.6	66.4/75.9	80/80				
								25*/30*	38/45.6	63.8/73.3	70/80										
								35*/40*	53.2/60.8	85.4/94.9	90/100										

MODEL: PQ300 & PQ360

DESCRIPTION				MODEL NUMBER																	
				PQ300							PQ360										
POWER SUPPLY (V-Ph-Hz)	VOLTAGE RANGE		FM (each)	COMPR-ESSOR (each)		BM		ELECTRIC HEATER		MCA	MOCP	COMPR-ESSOR (each)		BM		ELECTRIC HEATER		MCA	MOCP		
	Min.	Max.	FLA	RLA	LRA	HP	FLA	Nom. kW	FLA			RLA	LRA	HP	FLA	Nom. kW	FLA				
380/415-3-50 (4 WIRE)	342	457	2.9	25.6	167	7.5 (STD)	13	-	-	76.4	100	27.8	198	10 (STD)	15.1	-	-	83.5	110		
								10*/12*	15.2/18.2	76.4/76.4	100/100					10*/12*	15.2/18.2	83.5/83.5	110/110		
								15*/20*	22.8/30.4	76.4/76.4	100/100					15*/20*	22.8/30.4	83.5/83.5	110/110		
								25*/30*	38/45.6	76.4/76.4	100/100					25*/30*	38/45.6	83.5/83.5	110/110		
								35*/40*	53.2/60.8	82.8/92.3	100/100										
						10 (ALT.)	15.1	-	-	78.5	100	15 (ALT.)	22.6	-	-	91	110	10*/12*	15.2/18.2	91/91	110/110
								10*/12*	15.2/18.2	78.5/78.5	100/100			15*/20*	22.8/30.4	91/91	110/110				
								15*/20*	22.8/30.4	78.5/78.5	100/100			25*/30*	38/45.6	91/91	110/110				
								25*/30*	38/45.6	78.5/78.5	100/100										
								35*/40*	53.2/60.8	85.4/94.9	100/100										

Note: Please refer to page 16 for legend.

FAN PERFORMANCE DATA

(DIRECT DRIVE MOTOR)

Model No.: PQ036

BLOWER MOTOR SPEED	EXTERNAL STATIC PRESSURE (inch wg.)						
		0.1	0.2	0.3	0.4	0.5	0.6
HIGH	CFM	1380	1320	1340	1308	1275	1237
	BHP	0.81	0.80	0.78	0.77	0.75	0.73
MEDIUM	CFM	1250	1200	1187	1177	1166	1144
	BHP	0.70	0.70	0.69	0.68	0.68	0.67
LOW	CFM	1135	1115	1092	1062	1032	989
	BHP	0.63	0.62	0.61	0.60	0.58	0.56

Model No.: PQ048

BLOWER MOTOR SPEED	EXTERNAL STATIC PRESSURE (inch wg.)										
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
HIGH	CFM	1675	1625	1541	1509	1477	1444	1410	1376	1331	1285
	BHP	1.02	0.96	0.94	0.92	0.90	0.88	0.86	0.84	0.81	0.78
MEDIUM	CFM	1500	1400	1363	1340	1308	1275	1237	1198	1173	1148
	BHP	0.84	0.81	0.80	0.78	0.77	0.75	0.73	0.71	0.70	0.69
LOW	CFM	1300	1250	1200	1192	1187	1176	1144	1111	1032	952
	BHP	0.72	0.70	0.70	0.69	0.68	0.68	0.67	0.66	0.62	0.59

Model No.: PQ060

BLOWER MOTOR SPEED	EXTERNAL STATIC PRESSURE (inch wg.)										
		0.1	0.2	0.3	0.4	0.5	0.6	0.7	0.8	0.9	1.0
HIGH	CFM	2055	2000	1975	1960	1950	1925	1900	1870	1825	1780
	BHP	1.72	1.63	1.58	1.54	1.50	1.46	1.43	1.39	1.34	1.28
MEDIUM	CFM	1850	1800	1768	1756	1738	1720	1701	1683	1658	1633
	BHP	1.53	1.46	1.43	1.39	1.35	1.30	1.27	1.24	1.20	1.16
LOW	CFM	1650	1600	1558	1550	1542	1534	1526	1518	1494	1470
	BHP	1.31	1.26	1.24	1.21	1.19	1.16	1.13	1.11	1.08	1.05

NOTE: 1. Values include losses for dry coil, 1" thick filters & unit casing.
 2. Direct drive motors have single speed connection only. Factory set at medium speed. Thermostats are also single speed type only. Refer to the unit wiring diagram for connecting to other motor speeds.

FAN PERFORMANCE DATA

Model No.: PQ075

Airflow, CFM (L/S)	External Static Pressure (inch wg.)															
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1800 (849)	759*	0.43*	862	0.54	937	0.66	1015	0.78	1088	0.92	1156	1.06	1235	0.98	1270	1.20
2000 (944)	805*	0.54*	882	0.65	963	0.78	1039	0.91	1109	1.05	1176	1.19	1242	1.35	1299	1.51
2200 (1038)	845*	0.66*	911	0.78	989	0.91	1062	1.05	1131	1.19	1196	1.34	1258	1.50	1317*	1.67*
2400 (1133)	861	0.79	941	0.93	1016	1.06	1080	1.21	1153	1.36	1216	1.52	1277	1.68	1334*	1.85*
2600 (1227)	895	0.95	971	1.09	1043	1.23	1111	1.38	1175	1.54	1237	1.71	1296	1.87		
2800 (1321)	928	1.12	1001	1.27	1070	1.42	1135	1.58	1198	1.75	1258	1.92				II
3000 (1416)	962	1.31	1044	1.47	1098	1.63	1161	1.80								

- Notes:** 1. Values include losses for filters, unit casing and wet coils.
 2. Standard 1.5 HP motor to be used for the unshaded portion.
 3. Alt. 2 HP motor to be used for the shaded portion.
 4. Bordered regions indicate alternative drives I & II.
 * For bold figures, consult your nearest COOLINE representative for proper selection of drives. Drives shall be field supplied & installed.

Model No.: PQ090

Airflow, CFM (L/S)	External Static Pressure (inch wg.)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2400 (1133)	766*	0.65*	852	0.78	933	0.91	1008	1.05	1079	1.19	1146	1.34	1210	1.50	1271	1.66	1329	1.83	1384	2.00
2600 (1227)	815*	0.78*	877	0.92	954	1.05	1026	1.20	1095	1.35	1161	1.51	1223	1.67	1283	1.83	1340	2.01	1395	2.19
2800 (1321)	844	0.93	902	1.07	976	1.22	1046	1.37	1112	1.52	1176	1.69	1237	1.85	1296	2.03	1352	2.21	1406	2.39
3000 (1416)	874	1.09	927	1.24	998	1.39	1065	1.55	1130	1.72	1192	1.88	1251	2.06	1309	2.24	1364	2.42	1417	2.61
3200 (1510)	904	1.27	953	1.43	1021	1.59	1086	1.76	1153	1.93	1209	2.10	1267	2.28	1323	2.47	1377	2.66	1429	2.85
3400 (1605)	933	1.46	980	1.63	1044	1.80	1107	1.98	1167	2.16	1226	2.34	1282	2.53	1337	2.72				II
3600 (1699)	963	1.68	1007	1.86	1069	2.04	1129	2.22	1187	2.41	1244	2.60	1299	2.79						

- Notes:** 1. Values include losses for filters, unit casing and wet coils.
 2. Standard 2 HP motor to be used for the unshaded portion.
 3. Alt. 3 HP motor to be used for the shaded portion.
 4. Bordered regions indicate alternative drives I & II.
 * For bold figures, consult your nearest COOLINE representative for proper selection of drives. Drives shall be field supplied & installed.

Model No.: PQ100

Airflow, CFM (L/S)	External Static Pressure (inch wg.)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
2700 (1274)	665*	0.68*	723	0.78	785	0.93	848	1.07	905	1.24	961	1.39	1012	1.54	1064	1.73	1114	1.90	1160	2.05
2800 (1321)	674*	0.74*	725	0.82	788	0.96	849	1.12	906	1.29	962	1.43	1013	1.59	1065	1.76	1115	1.94	1161	2.11
3000 (1416)	690*	0.78*	737	0.93	800	1.08	854	1.17	910	1.39	964	1.54	1015	1.71	1067	1.89	1117	2.11		II
3200 (1510)	702*	0.87*	744	1.01	804	1.18	857	1.23	913	1.49	966	1.65	1017	1.83	1069	2.00	1119	2.23		
3400 (1605)	716	0.98	756	1.09	815	1.31	864	1.45	919	1.61	970	1.80	1019	1.96	1071	2.15				
3600 (1699)	732	1.09	766	1.23	823	1.40	876	1.57	927	1.75	974	1.90	1021	2.10						
3800 (1793)	766	1.28	793	1.40	852	1.60	904	1.78	954	1.94	997	2.13								
4000 (1888)	784	1.42	820	1.58	870	1.75	918	1.93	964	2.13										
4100(1935)	789	1.48	829	1.67	895	1.83	927	2.03	972	2.23										

- Notes:** 1. Values include losses for filters, unit casing and wet coils.
 2. Standard 2 HP motor to be used for the unshaded portion.
 3. Alt. 3 HP motor to be used for the shaded portion.
 4. Bordered regions indicate alternative drives I & II.
 * For bold figures, consult your nearest COOLINE representative for proper selection of drives. Drives shall be field supplied & installed.

FAN PERFORMANCE DATA

Model No.: PQ120

Airflow, CFM (L/S)	External Static Pressure (inch wg.)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
3200 (1510)	680*	0.813*	753	1.01	822	1.22	886	1.44	938	1.56	1006	1.69	1061	1.93	1114	2.17	1165	2.41	-	-
3400 (1605)	697*	0.924*	768	1.13	834	1.35	897	1.57	946	1.71	1013	1.85	1068	2.09	1120	2.34	1170*	2.60*	-	-
3600 (1699)	716*	1.042*	782	1.26	846	1.48	907	1.72	955	1.86	1021	2.01	1074	2.26	1125	2.53	1174*	2.79*		
3800 (1793)	733*	1.17*	797	1.39	859	1.63	918	1.87	965	2.02	1029	2.18	1081	2.45	1131	2.72				
4000 (1888)	749	1.31	812	1.54	872	1.78	929	2.03	970	2.19	1037	2.36	1088	2.63	II					
4200 (1982)	767	1.46	827	1.70	885	1.95	941	2.21	985	2.37	1046	2.55	1096	2.83						
4400 (2076)	785	1.62	843	1.87	899	2.12	953	2.39	995	2.56	1056	2.75								
4600 (2170)	802	1.80	859	2.05	913	2.31	966	2.59	1006	2.77										
4800 (2265)	820	1.99	875	2.24	927	2.51	970	2.80												

- Notes:** 1. Values include losses for filters, unit casing and wet coils.
 2. Standard 3 HP motor to be used.
 3. Bordered regions indicate alternative drives I & II.
 * For bold figures, consult your nearest COOLINE representative for proper selection of drives. Drives shall be field supplied & installed.

Model No.: PQ150

Airflow, CFM (L/S)	External Static Pressure (inch wg.)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
3800 (1793)	733*	1.17*	797*	1.39*	859	1.63	918	1.87	965	2.01	1029	2.18	1081	2.45	1131	2.72	1180*	2.99*	-	-
4000 (1888)	749*	1.31*	812*	1.54*	872	1.78	929	2.03	974	2.19	1037	2.36	1088	2.63	1137	2.91	II			
4200 (1982)	767*	1.46*	827	1.70	885	1.95	941	2.21	985	2.37	1041	2.55	1096	2.83	1145	3.12				
4400 (2076)	785*	1.62*	843	1.87	899	2.12	953	2.39	995	2.57	1056	2.75	1105	3.04	1152	3.34				
4600 (2170)	802*	1.8*	859	2.05	913	2.31	966	2.59	1006	2.77	1066	2.96	1113	3.26	1160	3.57				
4800 (2265)	820	1.99	875	2.24	927	2.51	981	2.80	1018	2.99	1076	3.19	1123	3.49	1168	3.80				
5000 (2360)	838	2.18	891	2.45	942	2.73	991	3.02	1030	3.21	1087	3.42	1132	3.74	1177*	4.06*				
5200 (2454)	856	2.40	907	2.67	957	2.95	1005	3.25	1042	3.46	1098	3.67	1142	3.99						
5400 (2548)	874	2.62	925	2.90	972	3.19	1019	3.50	1054	3.71	1109	3.93	1153	4.26						
5600 (2643)	898	2.86	944	3.15	987	3.45	1032	3.76	1067	3.98	1121	4.21	1163	4.54						
5800 (2737)	944	3.12	956	3.41	1002	3.72	1047	4.03	1080	4.26	1133	4.50								

- Notes:** 1. Values include losses for filters, unit casing and wet coils.
 2. Standard 3 HP motor to be used for the unshaded portion.
 3. Alt. 5 HP motor to be used for the shaded portion.
 4. Bordered regions indicate alternative drives I & II.
 * For bold figures, consult your nearest COOLINE representative for proper selection of drives. Drives shall be field supplied & installed.

Model No.: PQ180

Airflow, CFM (L/S)	External Static Pressure (inch wg.)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
4800 (2265)	652*	1.47*	711*	1.69*	728	1.93	763	2.18	826	2.25	880	2.53	928	2.57	970	2.92	1032	3.22	1075	3.54
5000 (2360)	668*	1.62*	725	1.85	740	2.10	773	2.26	844	2.43	888	2.62	933	2.77	975	3.12	1037	3.43	1077	3.75
5200 (2454)	683*	1.80*	738	2.03	752	2.28	783	2.34	853	2.62	896	2.91	940	3.11	981	3.32	1042	3.64	1083	3.97
5400 (2548)	699*	1.97*	752	2.21	764	2.47	807	2.54	858	2.80	904	3.12	948	3.18	1008	3.54	1047	3.87	1085	4.20
5600 (2643)	719*	2.16*	766	2.41	776	2.67	818	2.74	872	3.03	913	3.13	955	3.45	1017	3.77	1053	4.11	1092	4.44
5800 (2737)	731	2.36	781	2.61	797	2.78	830	2.96	882	3.26	926	3.57	963	3.66	1024	4.01	1059	4.35	1096	4.70
6000 (2832)	746	2.58	795	2.84	811	2.91	854	3.19	893	3.50	939	3.61	972	3.89	1031	4.26	1066	4.61	1102	4.96
6200 (2926)	762	2.80	809	3.07	830	3.15	865	3.36	904	3.75	948	3.86	981	4.19	1039	4.53	1073	4.88	1110	5.24
6400 (3020)	778	3.05	824	3.32	843	3.45	877	3.65	914	3.85	960	4.09	1013	4.46	1047	4.81	1077	5.16	1115	5.52
6600 (3115)	794	3.30	838	3.58	857	3.67	887	3.97	927	4.08	968	4.41	1030	4.71	1056	5.10	1088	5.46	1122	5.83
6800 (3209)	809	3.40	870	3.70	878	4.00	902	4.30	952	4.60	971	5.00	1041	5.30	1065	5.70	1098	6.00	1129	6.40
7000 (3303)	825	3.70	884	4.00	890	4.30	911	4.60	964	4.90	990	5.30	1048	5.60	1074	6.00	1102	6.30	1137	6.70
7200 (3398)	861	4.00	897	4.30	914	4.60	928	4.90	976	5.30	1001	5.60	1060	5.90	1083	6.30	1113	6.70	1145*	7.10*

- Notes:** 1. Values include losses for filters, unit casing and wet coils.
 2. Standard 5 HP motor to be used for the unshaded portion.
 3. Alt. 7.5 HP motor to be used for the shaded portion.
 4. Bordered regions indicate alternative drives I & II.
 * For bold figures, consult your nearest COOLINE representative for proper selection of drives. Drives shall be field supplied & installed.

FAN PERFORMANCE DATA

Model No.: PQ210

Airflow, CFM (L/S)	External Static Pressure (inch wg.)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
5800 (2737)	709*	2.21*	759*	2.46*	805	2.93	845	3.01	892	3.30	927	3.62	973	3.80	1031	4.12	1067	4.46	1103	4.81
6000 (2832)	725*	2.42*	774	2.68	826	3.00	857	3.30	901	3.60	935	3.80	982	4.20	1039	4.60	1074	4.92	1109	5.28
6200 (2926)	741*	2.65*	788	2.90	839	3.35	870	3.60	912	3.90	946	4.20	998	4.50	1047	4.85	1081	5.19	1111	5.55
6400 (3020)	757*	2.90*	802	3.17	849	3.60	882	3.90	925	4.30	956	4.60	1028	4.90	1058	5.20	1088	5.50	1122	5.85
6600 (3115)	773	3.16	824	3.42	875	3.80	898	4.13	945	4.50	966	4.80	1037	5.10	1064	5.42	1091	5.78	1129	6.15
6800 (3209)	808	3.23	846	3.56	892	4.11	910	4.45	961	4.80	977	5.11	1047	5.41	1074	5.75	1106	6.16	1137	6.47
7000 (3303)	815	3.56	856	3.95	911	4.40	928	4.73	972	5.00	990	5.34	1058	5.69	1082	6.05	1111	6.42	1145*	6.81*
7200 (3398)	835	4.00	872	4.20	925	4.70	935	5.00	978	5.35	1015	5.65	1064	5.98	1087	6.30	1120	6.8	1150*	7.23*
7400 (3492)	855	4.12	882	4.50	938	5.01	959	5.30	996	5.63	1032	5.93	1079	6.37	1095	6.75	1125	7.12	II	
7600 (3587)	881	4.40	907	4.72	954	5.25	974	5.54	1008	5.90	1046	6.30	1086	6.70	1099	7.11			II	
7800 (3681)	895	4.70	912	5.00	968	5.50	987	5.93	1027	6.30	1056	6.74	1099	7.11						
8000 (3775)	903	5.10	927	5.40	988	5.90	1001	6.25	1054	6.65	1067	7.08								
8200 (3870)	918	5.45	945	5.72	1002	6.32	1016	6.70	1067	7.12										

- Notes: 1. Values include losses for filters, unit casing and wet coils.
 2. Standard 5 HP motor to be used for the unshaded portion.
 3. Alt. 7.5 HP motor to be used for the shaded portion.
 4. Bordered regions indicate alternative drives I & II.
 * For bold figures, consult your nearest COOLINE representative for proper selection of drives. Drives shall be field supplied & installed.

Model No.: PQ240

Airflow, CFM (L/S)	External Static Pressure (inch wg.)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
6000 (2832)	577*	2.03*	586*	2.13*	689	2.24	741	2.36	790	2.68	837	3.02	882	3.12	926	3.48	967	3.84	1006	4.22
6200 (2926)	586*	2.15*	642*	2.25*	695	2.36	746	2.49	795	2.83	841	3.17	886	3.28	928	3.64	969	4.01	1009	4.39
6400 (3020)	595*	2.27*	649*	2.24*	701	2.50	751	2.63	799	2.98	845	3.33	889	3.44	931	3.81	972	4.19	1011	4.58
6600 (3115)	605*	2.39*	657*	2.51*	708	2.64	757	2.78	804	3.13	850	3.49	893	3.61	935	3.99	975	4.38	1014	4.77
6800 (3209)	614*	2.52*	665*	2.64*	715	2.78	763	2.93	809	3.29	854	3.66	897	3.79	938	4.17	978	4.57	1016	4.97
7000 (3303)	623*	2.66*	673	2.78	721	2.93	768	3.09	814	3.46	858	3.83	900	3.97	941	4.36	981	4.76	1019	5.17
7200 (3398)	653*	2.80*	681	2.94	728	3.09	774	3.25	819	3.63	862	4.01	904	4.15	945	4.55	984	4.96	1022	5.38
7400 (3492)	642*	2.95*	689	3.09	735	3.25	780	3.43	824	3.81	867	4.20	908	4.35	948	4.75	987	5.17	1024	5.59
7600 (3587)	651*	3.10*	697	3.26	743	3.43	787	3.61	828	3.97	872	4.39	913	4.55	952	4.96	990	5.38	1027	5.81
7800 (3681)	660*	3.26*	705	3.43	750	3.60	793	3.79	835	4.18	875	4.59	917	4.75	956	5.17	994	5.60	1030	6.04
8000 (3775)	670	4.43	714	3.60	757	3.79	800	3.98	841	4.38	882	4.79	921	4.97	960	5.40	997	5.83	1034	6.28
8200 (3870)	679	3.61	707	3.65	764	3.97	806	4.17	847	4.59	887	5.01	926	5.18	964	5.62	1001	6.07	1037	6.52
8400 (3964)	689	3.79	730	3.98	772	4.17	813	4.38	853	4.80	892	5.23	930	5.41	968	5.86	1004	6.31	1040	6.77
8600 (4058)	698	3.98	739	4.17	780	4.38	820	4.59	859	5.02	898	5.45	935	5.64	972	6.10	1008	6.56	1044	7.02
8800 (4152)	707	4.17	747	4.38	787	4.59	826	4.81	865	5.24	903	5.68	940	5.88	977	6.34	1012	6.81	II	
9000 (4247)	716	4.38	756	4.59	795	4.81	833	5.04	871	5.48	909	5.93	945	6.13	981	6.60				

- Notes: 1. Values include losses for filters, unit casing and wet coils.
 2. Standard 7.5 HP motor to be used for the entire range with either drive I & II.
 3. Bordered regions indicate alternative drives I & II.
 * For bold figures, consult your nearest COOLINE representative for proper selection of drives. Drives shall be field supplied & installed.

FAN PERFORMANCE DATA

Model No.: PQ300

Airflow, CFM (L/S)	External Static Pressure (inch wg.)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
8000 (3775)	670*	3.43*	714*	3.60*	757	3.79	800	3.98	841	4.38	882	4.79	921	4.97	960	5.40	997	5.83	1034	6.28
8200 (3870)	679*	3.61*	707*	3.65*	764	3.97	806	4.17	847	4.59	887	5.01	926	5.18	964	5.62	1001	6.07	1037	6.52
8400 (3964)	689*	3.79*	730	3.98	772	4.17	813	4.38	853	4.80	892	5.23	930	5.41	968	5.86	1004	6.31	1040	6.77
8600 (4058)	698*	3.98*	739	4.17	780	4.38	820	4.59	859	5.02	898	5.45	935	5.64	972	6.10	1008	6.56	1044	7.02
8800 (4152)	707*	4.17*	747	4.38	787	4.59	826	4.81	865	5.24	903	5.68	940	5.88	977	6.34	1012	6.81	1047	7.28
9000 (4247)	716*	4.38*	756	4.59	795	4.81	833	5.04	871	5.48	909	5.93	945	6.13	981	6.60	1016	7.07	1051	7.55
9200 (4341)	726	4.42	764	4.71	803	4.92	840	5.27	875	5.72	914	6.17	950	6.39	986	6.86	1021	7.34	1055	7.83
9400 (4436)	735	4.61	773	4.83	810	5.07	848	5.51	884	5.97	920	6.43	956	6.65	991	7.13	1025	7.62	1059	8.12
9600 (4530)	744	4.84	781	5.21	818	5.31	855	5.76	891	6.22	926	6.69	961	6.92	995	7.41	1029	7.90	1063	8.41
9800 (4624)	754	5.07	790	5.31	826	5.56	862	6.02	897	6.49	932	6.97	967	7.20	1001	7.70	1034	8.20	1067	8.71
10000 (4719)	763	5.31	799	5.56	834	6.22	869	6.38	904	6.76	938	7.25	972	7.49	1006	7.99	1039	8.50	1071	9.02
10200 (4813)	777	5.57	808	5.82	842	6.48	874	6.66	911	7.04	945	7.53	978	7.78	1011	8.29	1044	8.81	1076	9.33
10400 (4907)	782	5.83	817	6.09	850	6.76	884	6.94	918	7.33	951	7.83	984	8.13	1016	8.60	1049	9.13	II	
10600 (5002)	792	6.09	825	6.36	859	7.04	892	7.23	925	7.63	958	8.13	990	8.40	1022	8.92				
10800 (5096)	801	6.37	834	6.65	867	7.33	900	7.53	932	7.93	964	8.45	996	8.72	1028	9.25				
11000 (5191)	810	6.65	843	6.94	875	7.63	907	7.84	939	8.25	971	8.77	1002	9.05						
11200 (5286)	820	6.95	852	7.24	883	7.94	915	8.15	946	8.57	978	9.10								

- Notes:**
- Values include losses for filters, unit casing and wet coils.
 - Standard 7.5 HP motor to be used for the unshaded portion.
 - Alt. 10 HP motor to be used for the shaded portion.
 - Bordered regions indicate alternative drives I & II.
- * For bold figures, consult your nearest COOLINE representative for proper selection of drives. Drives shall be field supplied & installed.

Model No.: PQ360

Airflow, CFM (L/S)	External Static Pressure (inch wg.)																			
	0.2		0.4		0.6		0.8		1.0		1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
9600 (4530)	645*	5.40*	675*	5.70*	705	6.10	730	6.50	760	7.00	790	7.40	825	7.90	850	8.40	880	8.80	910	9.40
9800 (4624)	655*	5.60*	685*	5.90*	715	6.30	740	6.70	770	7.20	800	7.60	835	8.10	860	8.60	890	9.00	920	9.60
10000 (4719)	665*	5.80*	695	6.10	725	6.50	750	6.90	780	7.40	810	7.80	845	8.30	870	8.80	900	9.20	930	9.80
10200 (4813)	675*	6.00*	705	6.30	735	6.70	760	7.10	790	7.60	820	8.00	855	8.50	880	9.00	910	9.40	940	10.00
10400 (4907)	685*	6.20*	715	6.50	745	6.90	770	7.30	800	7.80	830	8.20	865	8.70	890	9.20	920	9.60	950	10.20
10600 (5002)	695	6.40	725	6.70	755	7.10	780	7.50	810	8.00	840	8.40	875	8.90	900	9.40	930	9.80	960	10.40
10800 (5096)	705	6.60	735	6.90	765	7.30	790	7.70	820	8.20	850	8.60	885	9.10	910	9.60	940	10.00	970	10.60
11000 (5191)	715	6.80	745	7.10	775	7.50	800	7.90	830	8.40	860	8.80	895	9.30	920	9.80	950	10.20	980	10.80
11200 (5286)	725	7.00	755	7.30	785	7.70	810	8.10	840	8.60	870	9.00	905	9.50	930	10.00	960	10.40	990	11.00
11400 (5380)	735	7.20	765	7.50	795	7.90	820	8.30	850	8.80	880	9.20	915	9.70	940	10.20	970	10.60	1000	11.20
11600 (5474)	745	7.40	775	7.70	805	8.10	830	8.50	860	9.00	890	9.40	925	9.90	950	10.40	980	10.80	1010	11.40
11800 (5569)	755	7.60	785	7.90	815	8.30	840	8.70	870	9.20	900	9.60	935	10.10	960	10.60	990	11.00	1020	11.60
12000 (5663)	765	7.80	795	8.10	825	8.50	850	8.90	880	9.40	910	9.80	945	10.30	970	10.80	1000	11.20	1030	11.80
12200 (5757)	775	8.00	805	8.30	835	8.70	860	9.10	890	9.60	920	10.00	955	10.50	980	11.00	1010	11.40	1040	12.00
12400 (5852)	785	8.20	815	8.50	845	8.90	870	9.30	900	9.80	930	10.20	965	10.70	990	11.20	1020	11.60	1050	12.20
12500 (5899)	795	8.40	825	8.70	855	9.10	880	9.50	910	10.00	940	10.40	975	10.90	1000	11.40	1030	11.80	1060	12.40

- Notes:**
- Values include losses for filters, unit casing and wet coils.
 - Standard 10 HP motor to be used for the unshaded portion.
 - Alt. 15 HP motor to be used for the shaded portion.
 - Bordered regions indicate alternative drives I & II.
- * For bold figures, consult your nearest COOLINE representative for proper selection of drives. Drives shall be field supplied & installed.

SOUND LEVEL DATA

To obtain Sound Pressure Level measured 5 ft. (1.6 m) directly opposite the center of blower inlet:

1. From performance table at operating conditions, find BHP, RPM & Static Efficiency (SE).
 $SE = (CFM \times TSP) / 6362 \times BHP$ (see step 4 & table below).
2. Read dBA level from respective graph at operating BHP & SE(%).
3. Knowing RPM, select proper row from sound power factor table and add dBA level to each values in the row to obtain Sound Power Level (dB re 10^{-12} watts).
4. Calculate TSP (Total Static Pressure) as follows:

$$TSP = ISP + ESP$$

ESP (External Static Pressure) from Job Specification.

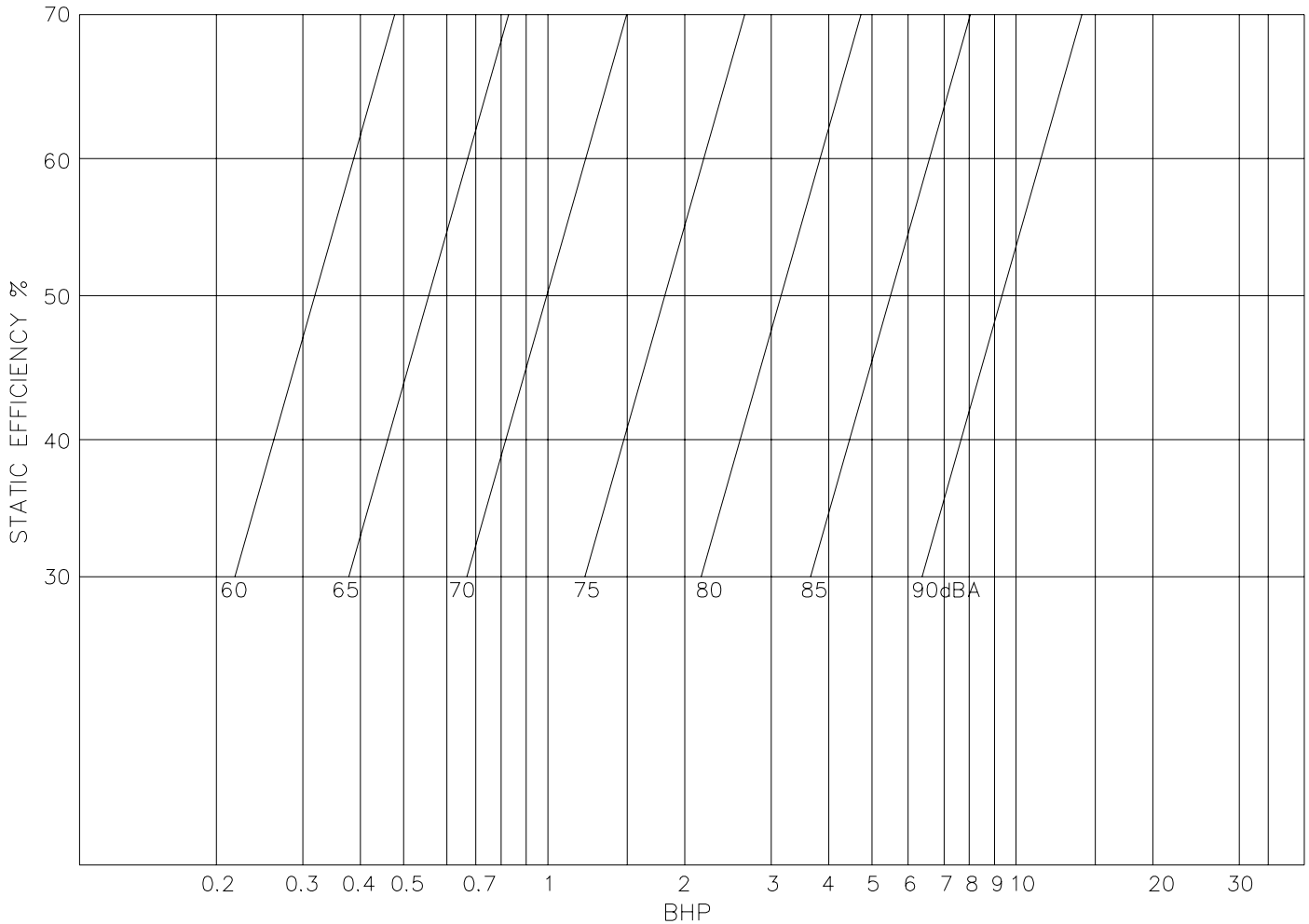
ISP (Internal Static Pressure) Calculate from table below.

FACE VELOCITY (FPM)	INTERNAL STATIC PRESSURE (inch wg.)		
	2 ROW	3 ROW	4 ROW
200	0.42	0.44	0.47
300	0.67	0.73	0.78
400	0.88	0.95	1.05
450	1.02	1.13	1.23
500	1.16	1.29	1.49

NOTE:

Pressure drop across filter, coil and casing are included in ISP.

SOUND LEVEL DATA MODELS: PQ036 - PQ060



SOUND POWER FACTOR TABLE

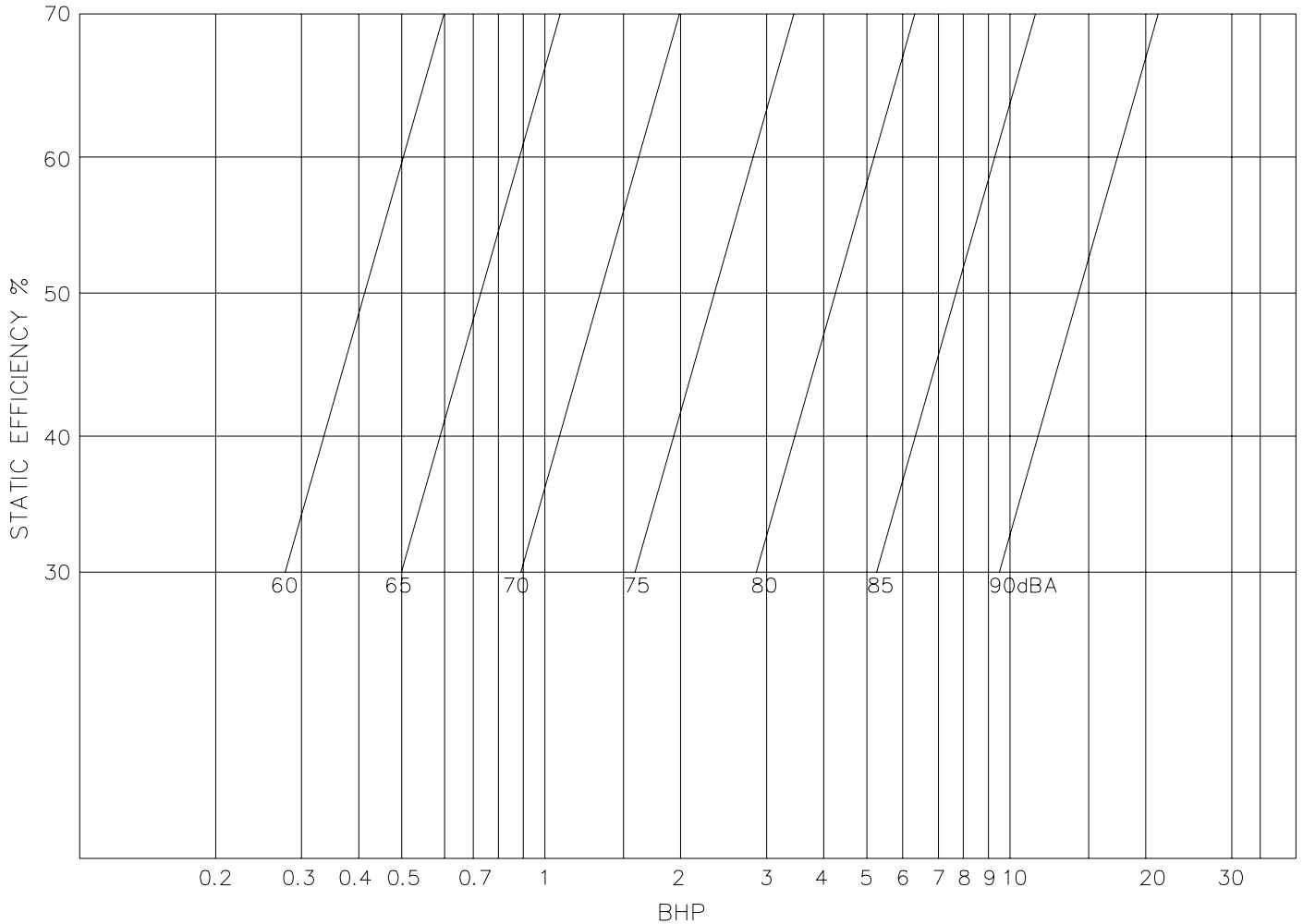
VALUES GIVE TO SOUND POWER								
Octave Band Center Frequency – Hz	63	125	250	500	1000	2000	4000	8000
493-887 RPM	- 7.5	+ 0.5	+ 7.5	+ 10.5	+ 5.5	+ 2	- 1	- 6.5
887-1750 RPM	- 8	+ 0.5	+ 7	+ 7	+ 8	+ 1.5	- 1.5	- 6.5
1750-2500 RPM	- 8	+ 0.5	+ 7	+ 7	+ 5	+ 4.5	- 1.5	- 6.5

To obtain Sound Pressure Level measured 5 ft. (1.6 m) directly opposite the center of blower inlet:

1. From performance table at operating conditions, find BHP, RPM & Static Efficiency (SE).

$$SE = \frac{CFM \times TSP}{6362 \times BHP}$$
2. Read dBA level from above graph at operating BHP & SE(%).
3. Knowing RPM, select proper row from above table and add dBA level to each values in the row to obtain Sound Power Level (dB re 10^{-12} watts).

SOUND LEVEL DATA MODELS: PQ075 - PQ090



SOUND POWER FACTOR TABLE

VALUES GIVE TO SOUND POWER								
Octave Band Center Frequency – Hz	63	125	250	500	1000	2000	4000	8000
251-495 RPM	- 6	+ 2	+ 11.5	+ 8	+ 5.5	+ 2	- 1	- 6.5
495-990 RPM	- 6.5	+ 1.5	+ 8	+ 10.5	+ 5	+ 1.5	- 1.5	- 7
990-1953 RPM	- 7	+ 1.5	+ 8	+ 7	+ 8	+ 1.5	- 2	- 7.5
1953-2050 RPM	- 7	+ 1.5	+ 8	+ 7	+ 5	+ 4.5	- 2	- 7.5

To obtain Sound Pressure Level measured 5 ft. (1.6 m) directly opposite the center of blower inlet:

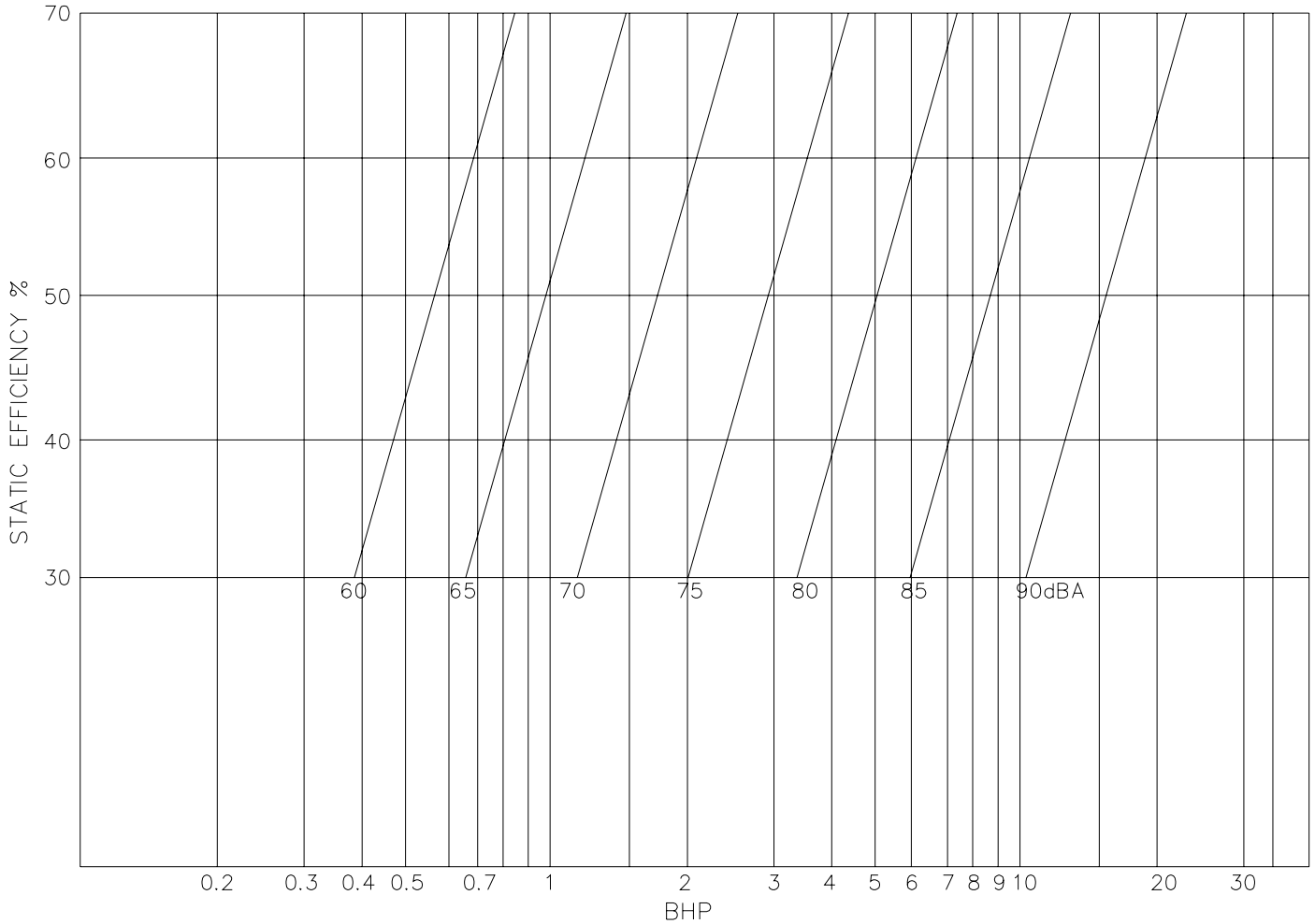
1. From performance table at operating conditions, find BHP, RPM & Static Efficiency (SE).

$$SE = \frac{CFM \times TSP}{6362 \times BHP}$$

2. Read dBA level from above graph at operating BHP & SE(%).

3. Knowing RPM, select proper row from above table and add dBA level to each values in the row to obtain Sound Power Level (dB re 10^{-12} watts).

SOUND LEVEL DATA MODELS: PQ100 - PQ210



SOUND POWER FACTOR TABLE

VALUES GIVE TO SOUND POWER								
Octave Band Center Frequency – Hz	63	125	250	500	1000	2000	4000	8000
211-417 RPM	- 4.5	+ 3	+ 12	+ 8	+ 5	+ 2	- 1.5	- 7
417-835 RPM	- 5.5	+ 2.5	+ 8.5	+ 10.5	+ 4.5	+ 1.5	- 2	- 7.5
835-1647 RPM	- 5.5	+ 2.5	+ 8	+ 7	+ 7	+ 1	- 2.5	- 7.5

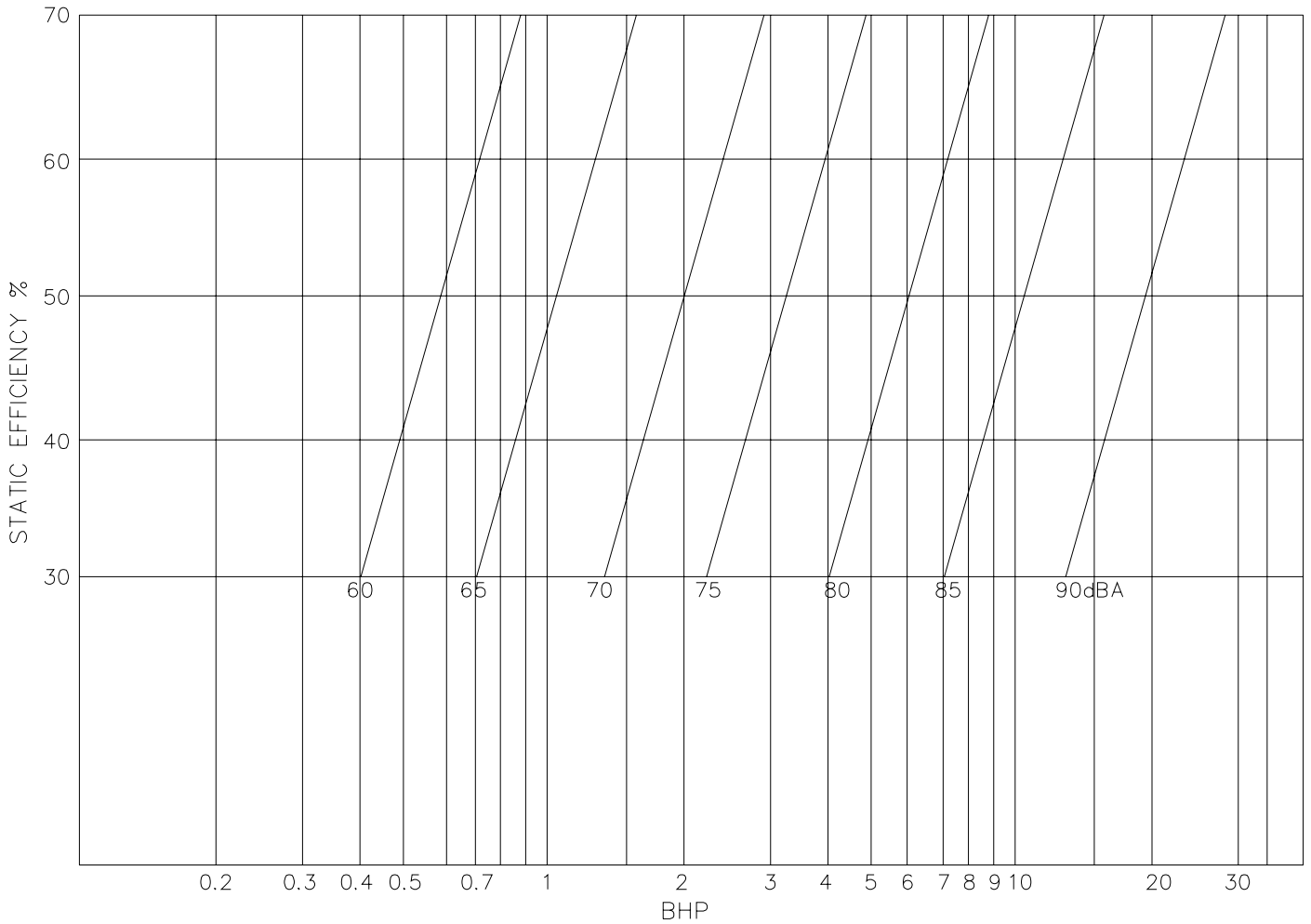
To obtain Sound Pressure Level measured 5 ft. (1.6 m) directly opposite the center of blower inlet:

1. From performance table at operating conditions, find BHP, RPM & Static Efficiency (SE).

$$SE = \frac{CFM \times TSP}{6362 \times BHP}$$

2. Read dBA level from above graph at operating BHP & SE(%).
3. Knowing RPM, select proper row from above table and add dBA level to each values in the row to obtain Sound Power Level (dB re 10^{-12} watts).

SOUND LEVEL DATA MODELS: PQ240 - PQ300



SOUND POWER FACTOR TABLE

VALUES GIVE TO SOUND POWER								
Octave Band Center Frequency – Hz	63	125	250	500	1000	2000	4000	8000
255-443 RPM	- 3.5	+ 4	+ 12.5	+ 8	+ 4.5	+ 1.5	- 2	- 7.5
443-887 RPM	- 4	+ 3.5	+ 9	+ 10	+ 4	+ 1	- 2.5	- 8
887-1750 RPM	- 4	+ 3.5	+ 8.5	+ 7	+ 7	+ 0.5	- 3	- 8

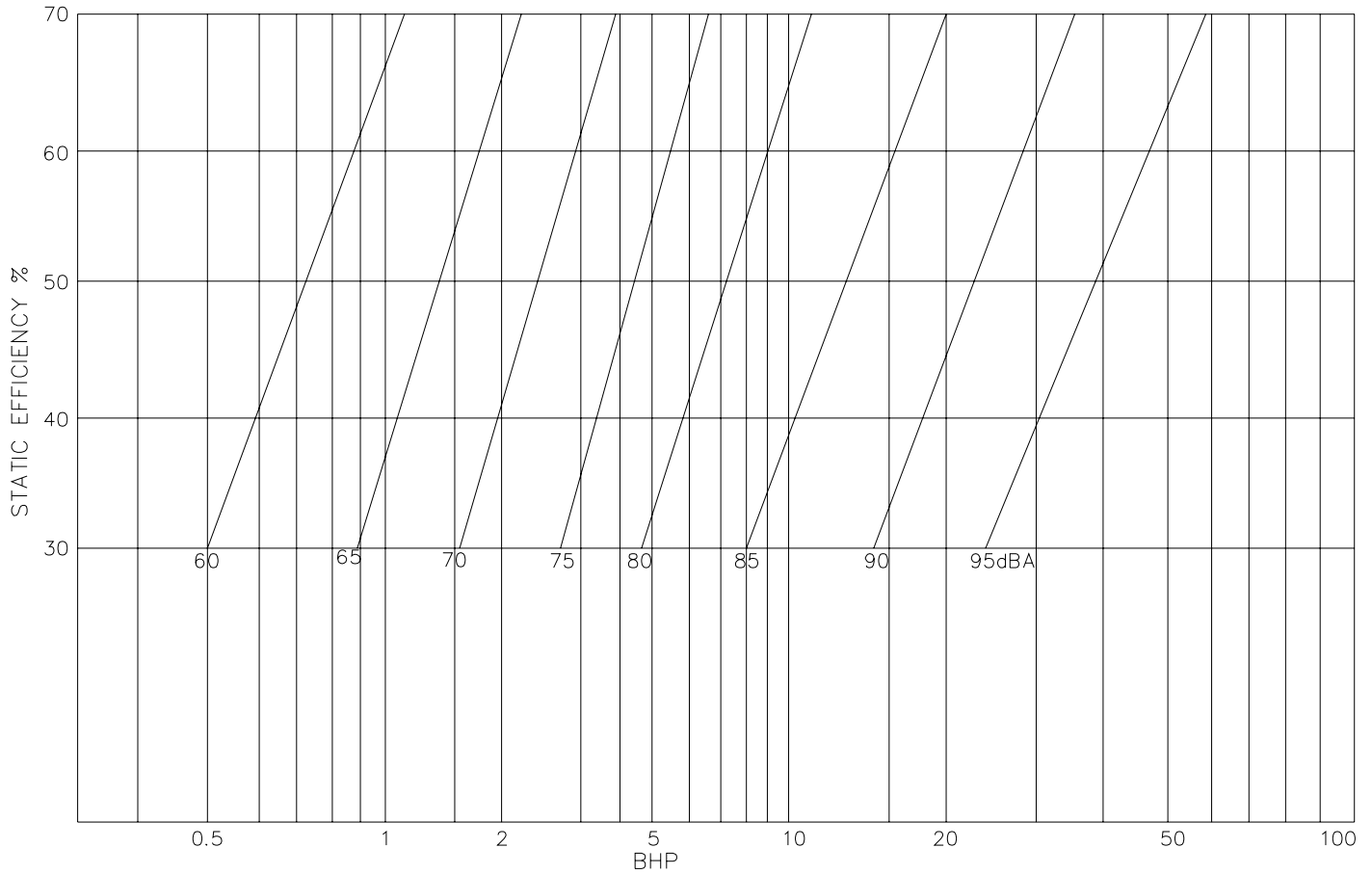
To obtain Sound Pressure Level measured 5 ft. (1.6 m) directly opposite the center of blower inlet:

1. From performance table at operating conditions, find BHP, RPM & Static Efficiency (SE).

$$SE = \frac{CFM \times TSP}{6362 \times BHP}$$
2. Read dBA level from above graph at operating BHP & SE(%).
3. Knowing RPM, select proper row from above table and add dBA level to each values in the row to obtain Sound Power Level (dB re 10^{-12} watts).

SOUND LEVEL DATA

MODEL: PQ360



SOUND POWER FACTOR TABLE

VALUES GIVE TO SOUND POWER								
Octave Band Center Frequency – Hz	63	125	250	500	1000	2000	4000	8000
267-507 RPM	- 3	+ 4.5	+ 12.5	+ 7.5	+ 4.5	+ 1.5	- 2	- 7.5
507-1014 RPM	- 3.5	+ 3.5	+ 9	+ 10	+ 4	+ 0.5	- 2.5	- 8
1014-2000 RPM	- 4	+ 3.5	+ 8.5	+ 7	+ 6.5	+ 0.5	- 3	- 8

To obtain Sound Pressure Level measured 5 ft. (1.6 m) directly opposite to the center of blower inlet:

1. From performance table at operating conditions, find BHP, RPM & Static Efficiency (SE).

$$SE = \frac{CFM \times TSP}{6362 \times BHP}$$
2. Read dBA level from above graph at operating BHP & SE(%).
3. Knowing RPM, select proper row from above table and add dBA level to each values in the row to obtain Sound Power Level (dB re 10^{-12} watts).

STATIC PRESSURE DROP (inch wg.)

MODELS: PQ036 - PQ060

COMPONENT	CFM					
	900	1200	1400	1600	1800	2000
1 HEATER MODULE	0.12	0.12	0.12	0.13	0.14	0.15
2 HEATER MODULE	0.19	0.19	0.19	0.20	0.21	0.21

MODELS: PQ075 - PQ090

COMPONENT	CFM										
	1600	1800	2000	2200	2400	2600	3000	3200	3400	3600	3800
1 HEATER MODULE	0.11	0.12	0.13	0.13	0.14	0.15	0.16	0.16	0.17	0.18	0.18
2 HEATER MODULE	0.18	0.19	0.19	0.19	0.20	0.20	0.21	0.21	0.22	0.23	0.23

MODELS: PQ100 - PQ150

COMPONENT	CFM									
	2600	2800	3000	3400	3800	4000	4200	4800	5200	5800
1 HEATER MODULE	0.04	0.04	0.05	0.08	0.10	0.11	0.12	0.14	0.16	0.18
2 HEATER MODULE	0.06	0.06	0.07	0.10	0.12	0.14	0.15	0.18	0.20	0.22

MODELS: PQ180 - PQ210

COMPONENT	CFM										
	4800	5200	5600	6000	6200	6800	7000	7400	7600	7800	8200
1 HEATER MODULE	0.08	0.08	0.08	0.08	0.08	0.09	0.10	0.10	0.10	0.11	0.11
2 HEATER MODULE	0.14	0.14	0.14	0.14	0.14	0.16	0.16	0.16	0.16	0.17	0.17

MODELS: PQ240 - PQ360

COMPONENT	CFM										
	6000	6600	7200	7800	8400	9000	9600	10200	10800	11400	12000
1 HEATER MODULE	0.05	0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.13	0.14	0.15
2 HEATER MODULE	0.14	0.15	0.16	0.17	0.18	0.19	0.20	0.21	0.22	0.23	0.24

BLOWER MOTOR EFFICIENCY

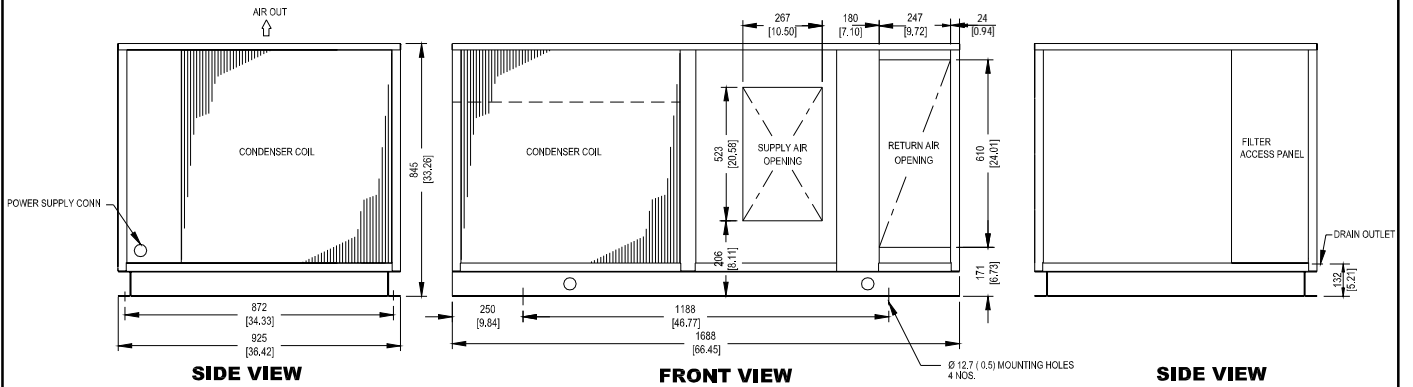
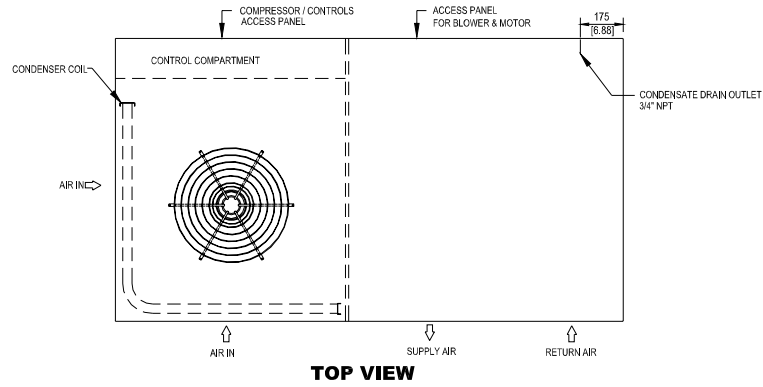
MOTOR HP	0.75	1.0	1.5	2.0	3.0	5.0	7.5	10.0
EFFICIENCY (%)	0.81	0.81	0.80	0.81	0.81	0.80	0.81	0.80

NOTE: Convert BHP to watts using following formula

$$\text{Watts} = \frac{746 \times \text{BHP}}{\text{Motor Efficiency}}$$

UNIT DIMENSIONS

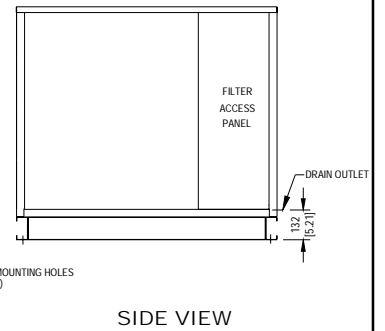
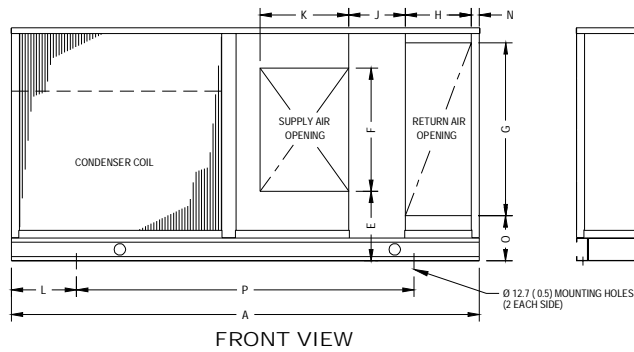
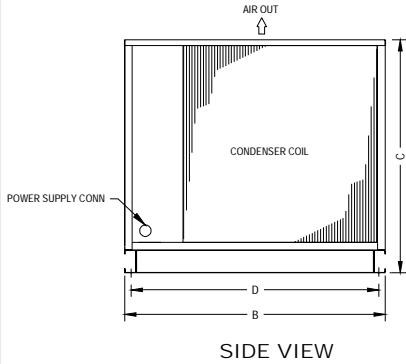
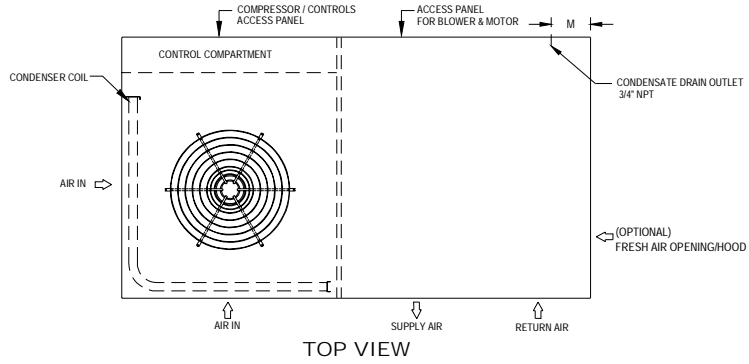
PQ036 - PQ060



NOTE:
 1. All dimensions are in mm (dimensions in brackets are in inches).

UNIT DIMENSIONS

PQ075 - PQ150



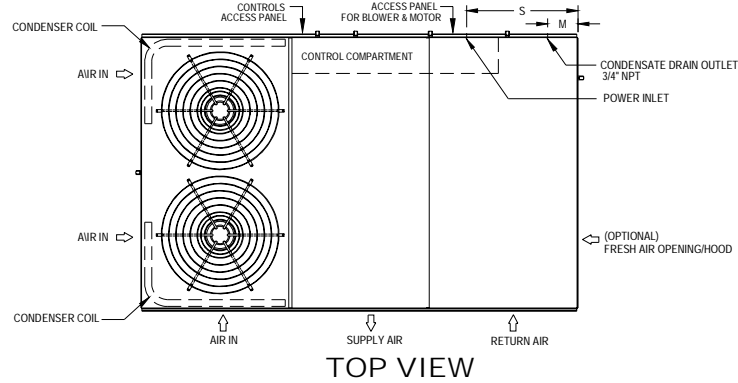
MODEL	DIMENSIONS														
	A	B	C	D	E	F	G	H	J	K	L	M	N	O	P
PQ075 - PQ090	2080(81.89)	1162(45.75)	1034(40.71)	1114(43.86)	308(12.15)	550(21.64)	798(31.4)	300(11.81)	251(9.87)	396(15.59)	152(5.98)	175(6.88)	24(0.94)	171(6.73)	1775(69.88)
PQ100 - PQ150	2212(87.1)	1408(55.43)	1085(42.72)	1372(54)	255(10.03)	707(27.84)	790(31.1)	367(14.46)	190(7.48)	476(18.74)	150(5.91)	145(5.71)	48(1.89)	200(7.87)	1907(75.08)

NOTE:

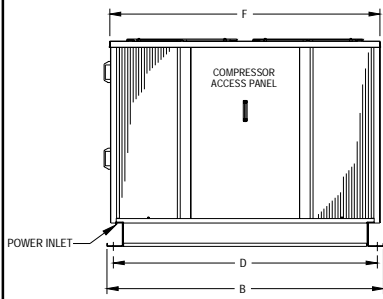
1. All dimensions are in mm (dimensions in brackets are in inches).

UNIT DIMENSIONS

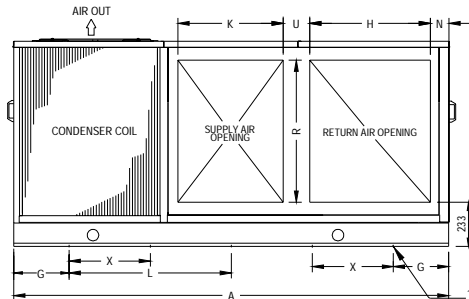
PQ180 - PQ360



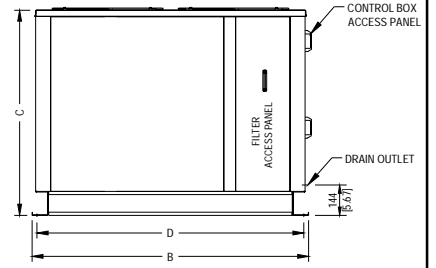
TOP VIEW



SIDE VIEW



FRONT VIEW



SIDE VIEW

MODEL	DIMENSIONS														
	A	B	C	D	F	G	H	K	L	N	R	S	M	U	X
PQ180 - PQ210	2794(110)	1778(70)	1266(49.83)	1715(67.52)	1737(68.37)	197(7.75)	817(32.17)	720(28.35)	1200(47.25)	83(3.27)	912(35.9)	666(26.22)	194(7.64)	171(6.73)	-
PQ240 - PQ300	3048(120)	2135(84.1)	1446(56.94)	2075(81.7)	2152(84.72)	324(12.76)	915(36.02)	740(29.13)	1200(47.25)	84(3.31)	1050(41.34)	666(26.22)	289(11.38)	194(7.64)	-
PQ360	3683(145)	2184(86)	1446(56.94)	2125(83.66)	2184(86)	42(1.65)	938(36.93)	527(20.75)	-	97(3.83)	1000(39.37)	680(26.77)	254(10)	372(14.65)	1125(44.29)

NOTE:

1. All dimensions are in mm (dimensions in brackets are in inches).

CONTROLS & SEQUENCE OF OPERATION

Scroll compressors are designed to operate in single direction only. Hence, care has to be taken to ensure correct rotation when the system is operated. Verification of correct rotation is by observing that the suction pressure drops and discharge pressure rises when compressor run. Reverse rotation results in abnormal sound, as well as, substantially low current draw and by interchanging power supply wire L1 & L3 will correct this problem.

The operation of the air conditioning unit is controlled by a 24VAC electronic control board.

GENERAL

The thermostat normally displays room temperature and mode of operation. The five buttons on the front of the unit allow complete control of the thermostat. The thermostat also allows to select continuous fan operation (useful when using an air cleaner) or have the fan come on with the compressor.

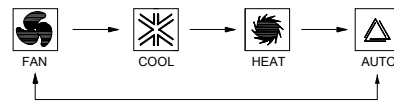
SWITCH FUNCTION

- On/Off Key : Switch the system On or Off.
- Up Key : To increases the set temperature.
- Down Key : To decreases the set temperature.
- Mode Key : Changes the mode to Fan, Cool, Heat or Auto.
- Fan Key : Changes the Fan Operation to Auto or Continuous.
- °C/°F selection : By pressing Mode & UP key together, toggles between °C to °F or vice versa.

USER CONTROLS

Mode:

Select the desired mode of operation by pressing of the mode button:



Fan: In this mode of operation, the compressor will be in inactive state. Display shows room temperature. Fan will be running.

Cool: In this mode of operation, the compressor will be ON after a delay depending on the differential of room temperature & Set temperature.

Heat: In this mode of operation, Fan is ON.

Auto: In auto mode, thermostat provide automatic changeover from heating to cooling mode & vice versa. Thermostat automatically switches to maintain the desired temperature.

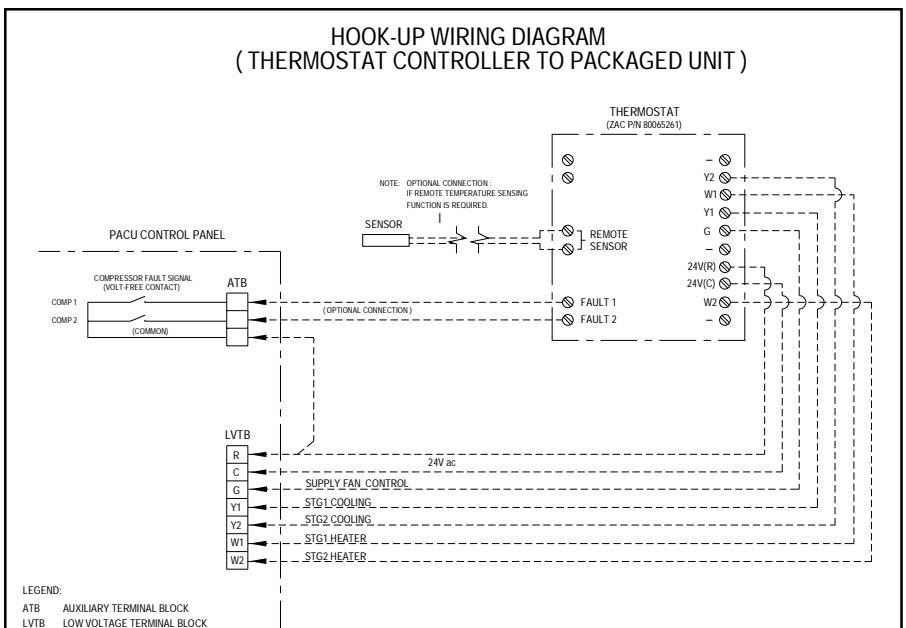
DIP SWITCH OPTIONS AND FUNCTIONS

There are 4 small DIP (Dual in line package) switches on the back of the circuit board which must be configured by the installer.

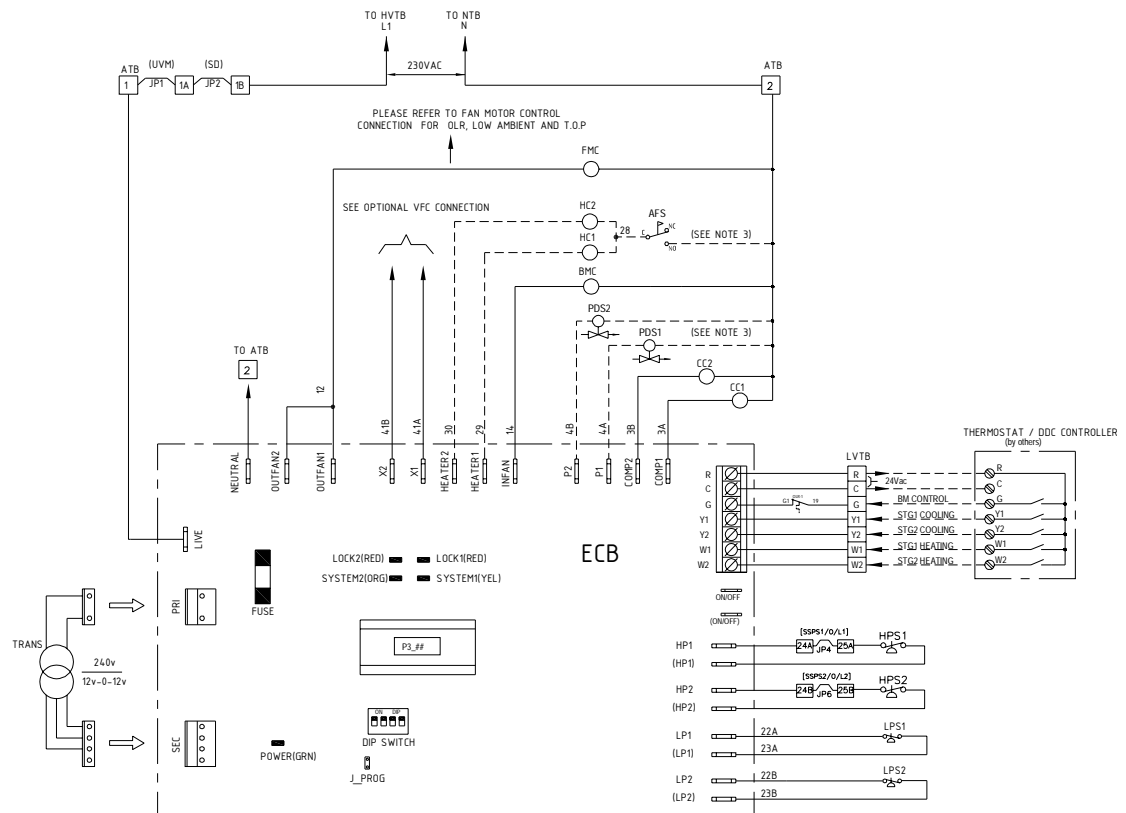
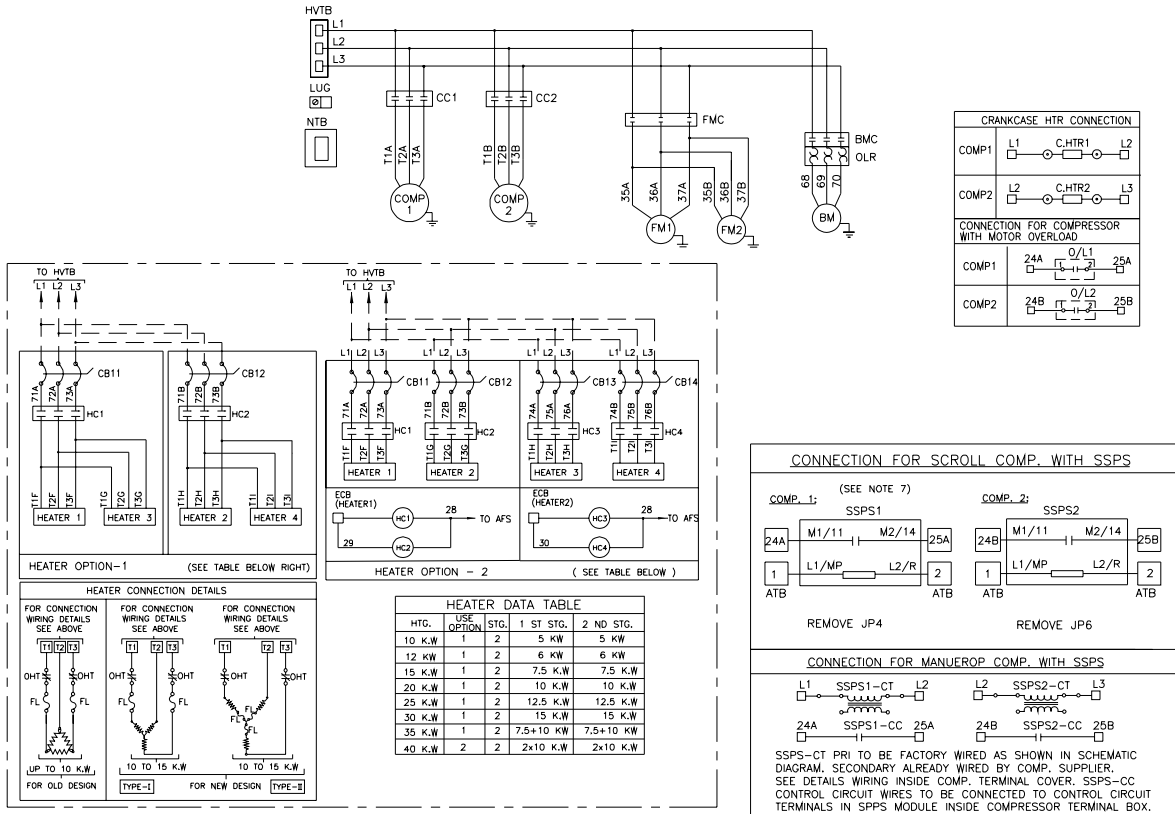
DIP SWITCH SELECTION		
SWITCH	ON	OFF
1	N. A.	-
2	N. A.	-
3	N. A.	-
4	INDOOR SENSOR	REMOTE SENSOR

Note:

Keep DIP SWITCH 1, 2 & 3 in OFF position only.

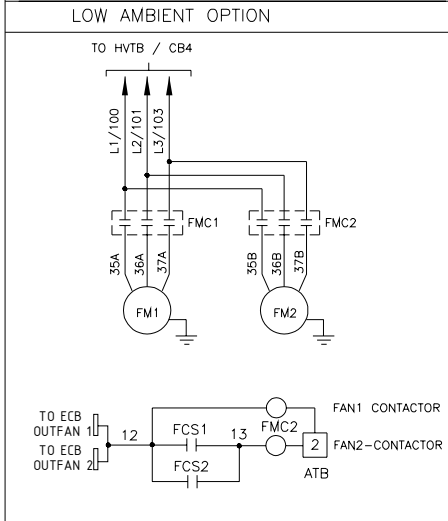
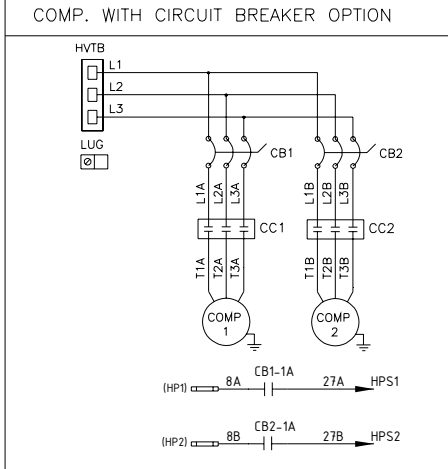
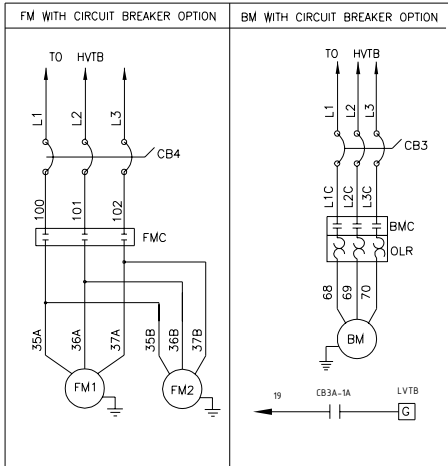


TYPICAL SCHEMATIC WIRING DIAGRAM

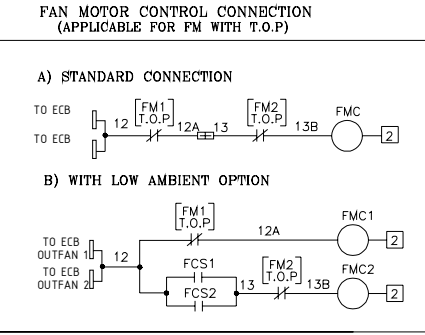
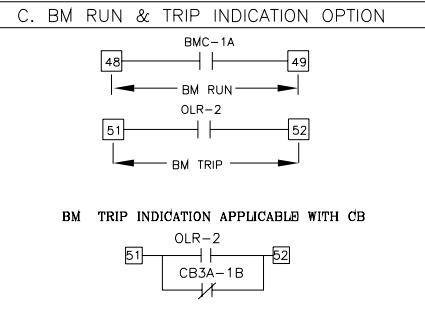
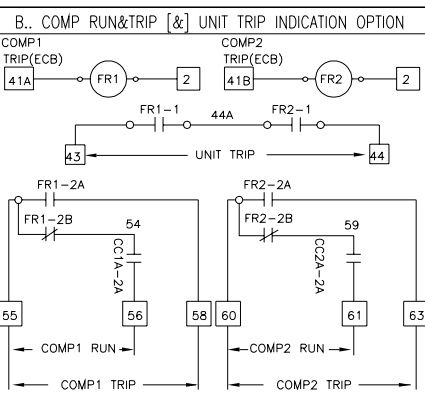
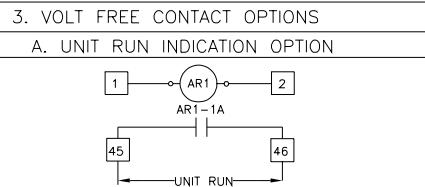
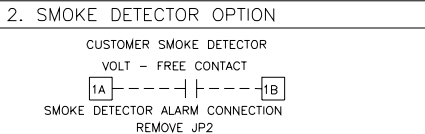
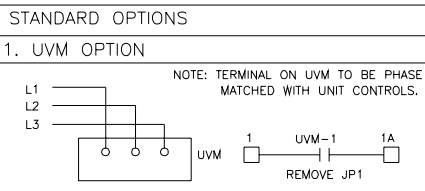


NOTE: 1. Refer to next page for legend, notes & wiring diagram for optional items.
 2. Refer to unit control box (inside panel) for exact wiring diagram.

TYPICAL SCHEMATIC WIRING DIAGRAM



PRESSURE SWITCH SETTINGS		
NAME	OPEN (PSIG)	CLOSE (PSIG)
LPS1 & 2	25 ± 5	50 ± 5
HPS1 & 2	450 ± 10	360 ± 15
FCS1 & 2	190 ± 15	290 ± 10



LEGEND	
AR	AUXILIARY RELAY
AFS	AIRFLOW SWITCH
ATB	AUXILIARY TERMINAL BLOCK
BM	BLOWER MOTOR
BMC	BLOWER MOTOR CONTACTOR
CC	COMPRESSOR CONTACTOR
CCA	AUXILIARY CONTACT
CB	CIRCUIT BREAKER
C. HTR	CRANKCASE HEATER
COMP	COMPRESSOR
ECB	ELECTRONIC CONTROL BOARD
FCS	FAN CYCLING SWITCH
F	FUSE
FL	FUSE LINK
FM	FAN MOTOR (CONDENSER)
FMC	FAN MOTOR CONTACTOR
FR	FAULT RELAY
HC	HEATER CONTACTOR
HPS	HIGH PRESSURE SWITCH
HVTB	HIGH VOLTAGE TERMINAL BLOCK
HTR	HEATER
JP	JUMPER
L1	LINE 1
L2	LINE 2
L3	LINE 3
LPS	LOW PRESSURE SWITCH
LUG	LUG GROUND
NTB	NEUTRAL TERMINAL BLOCK
O/L	OVER LOAD
OHT	OVER HEAT THERMOSTAT
PDS	PUMP DOWN SOLENOID
SSPS	SOLID STATE PROTECTIVE SYSTEM
SD	SMOKE DETECTOR
TRANS	TRANSFORMER
T/STAT	THERMOSTAT
T.O.P.	THERMAL OVERLOAD PROTECTION
UVM	UNDER VOLTAGE MONITOR
---	FIELD WIRING
+	DISCONNECT TAB - 1/4"
⊙	SPLICE-CLOSED END
□	TERMINAL BLOCK OR TERMINATION POINT

- NOTES**
- POWER SUPPLY, 380/415V-3PH-50Hz.
 - ANY WIRE REPLACEMENT SHOULD BE OF 90°C OR ITS EQUIVALENT. USE COPPER CONDUCTOR WIRES ONLY.
 - IF PDS & HEATERS ARE FACTORY INSTALLED, PLEASE READ BROKEN LINES AS CONTINUOUS LINES.
 - POWER MUST BE SUPPLIED TO CRANKCASE HEATER FOR MINIMUM OF 12 HOURS PRIOR TO SYSTEM START UP. IF POWER IS OFF 6 HOURS OR MORE, CRANKCASE HEATER MUST BE ON FOR 12 HOURS BEFORE OPERATING THE SYSTEM.
 - FAILURE TO FOLLOW THESE INSTRUCTIONS MAY RESULT IN COMPRESSOR DAMAGE.
 - FUSED DISCONNECT SWITCH OR CIRCUIT BREAKER TO BE PROVIDED BY CONSUMER WITH RATING AS RECOMMENDED BY COOLINE.
 - COMPRESSORS ARE PROVIDED WITH INTERNAL OVERLOAD.
 - IF COMPRESSOR IS SUPPLIED WITH SSPS, CONNECT AS SHOWN. PLEASE ALLOW 2-3 MINUTES FOR SSPS SWITCH TO CLOSE, BEFORE STARTING THE UNIT.
 - IF ANY CHANGE IN DIP SWITCH SETTING IS REQUIRED, TURN OFF POWER FIRST & SET REQUIRED SETTING.

PARTS LIST

MODEL NUMBER	PQ036L	PQ048L	PQ060L
COMPRESSOR	800-684-08	800-672-52	800-643-01
CONDENSER FAN MOTOR	800-555-26	800-555-26	800-555-26
BLOWER MOTOR	800-546-94	800-546-94	800-546-95
BLOWER WHEEL	800-707-34	800-707-34	800-707-34
CONDENSER FAN PROPELLER	800-225-02	800-225-02	800-225-02
CONTACTOR, COMPRESSOR	800-095-01	800-095-01	800-095-01
CONTACTOR, BLOWER MOTOR	800-736-27	800-736-27	800-736-27
CAPACITOR, FAN MOTOR	800-353-15	800-353-15	800-353-15
AIR FLOW SWITCH	800-005-02	800-005-02	800-005-02
LOW PRESSURE CONTROL	800-557-00	800-557-00	800-557-00
HIGH PRESSURE CONTROL	800-558-00	800-558-00	800-558-00
FAN GRILLE	800-625-46	800-625-46	800-625-46
FILTER DRIER	800-531-08	800-531-08	800-531-08
CONTROLLER	800-652-52	800-652-52	800-652-52
TRANSFORMER	800-652-53	800-652-53	800-652-53

MODEL NUMBER	PQ075L	PQ090L	PQ100L	PQ120L	PQ150L	PQ180L	PQ210L	PQ240L	PQ300L	PQ360L
COMPRESSOR	800-674-78	800-684-09	800-672-52	800-698-25	800-698-78	800-698-81 800-698-67	800-698-38	800-698-19	800-614-82	800-614-85
CONDENSER FAN MOTOR	800-545-67	800-545-68	800-545-68	800-545-68	800-545-68	800-545-68	800-545-68	800-555-06	800-555-06	800-555-06
BLOWER MOTOR	800-544-13	800-544-16	800-544-16	800-544-17	800-544-17	800-544-40	800-544-40	800-544-73	800-544-73	800-544-74
BLOWER WHEEL	800-707-46	800-707-46	800-707-02	800-707-02	800-707-02	800-707-02	800-707-02	800-707-23	800-707-23	800-707-94
CONDENSER FAN PROPELLER	800-224-23	800-224-23	800-224-23	800-224-23	800-224-23	800-224-23	800-224-23	800-224-33	800-224-33	800-224-33
CONTACTOR, COMPRESSOR	800-095-01	800-095-01	800-095-01	800-095-01	800-095-01	800-736-22	800-736-22	800-736-22	800-736-22	800-736-22
CONTACTOR, BLOWER MOTOR	800-095-01	800-095-01	800-095-01	800-095-01	800-095-01	800-095-01	800-098-55	800-098-55	800-098-55	800-098-55
CONTACTOR, FAN MOTOR	N.A.	800-095-01	800-095-01	800-095-01	800-095-01	800-095-01	800-095-01	800-095-01	800-095-01	800-095-01
AIRFLOW SWITCH	800-005-02	800-005-02	800-005-02	800-005-02	800-005-02	800-005-02	800-005-02	800-005-02	800-005-02	800-005-02
EXPANSION VALVE	800-181-00	800-183-01	800-183-01	800-181-00	800-181-00	800-182-00	800-182-00	800-185-00	800-186-00	800-186-00
DISTRIBUTOR	800-192-03	800-198-02	800-198-02	800-192-03	800-192-03	800-196-00	800-196-00	800-194-01	800-192-02	800-196-16
LOW PRESSURE CONTROL	800-557-00	800-557-00	800-557-00	800-557-00	800-557-00	800-557-00	800-557-00	800-557-00	800-557-00	800-557-00
HIGH PRESSURE CONTROL	800-558-00	800-558-00	800-558-00	800-558-00	800-558-00	800-558-00	800-558-00	800-558-00	800-558-00	800-558-00
FAN GRILLE	800-625-29	800-625-29	800-625-29	800-625-29	800-625-29	800-625-74	800-625-74	800-625-38	800-625-38	800-625-38
FILTER DRIER	800-531-08	800-531-08	800-531-08	800-531-08	800-531-08	800-531-05	800-531-05	800-531-05	800-531-05	800-531-01
CONTROLLER	800-652-52	800-652-63	800-652-63	800-652-63	800-652-63	800-652-63	800-652-63	800-652-63	800-652-63	800-652-63
TRANSFORMER	800-652-53	800-652-53	800-652-53	800-652-53	800-652-53	800-652-53	800-652-53	800-652-53	800-652-53	800-652-53



from  Zamil

In 1989, Zamil Air Conditioners (ZAC), one of the sector business of Zamil Industrial and the Number 1 Middle East manufacturer of air conditioning systems, introduced its international brand – Cooline, to the growing world market. Today, Cooline supplies air conditioners to more than 55 countries worldwide with major markets in GCC, Middle East, North Africa, Europe and Asia. In addition to the Head Office in Saudi Arabia, five regional offices handles Cooline's overall operations including more than 25 international distributors.

All ZAC Products are available under the Cooline brand. Cooline Products include an array of central air conditioners for residential, commercial and industrial use, including concealed units up to 5 tons, ducted splits up to 30 tons, packaged units up to 80 tons, single and double skin air handling units up to 70,630 CFM and water chillers up to 550 tons cooling capacity. New products include High Efficiency Ratio (EER) units which comply with the more demanding international codes and heat pump units with increased overall Coefficient of Performance (COP).

Cooline is the first brand from the Middle East to receive Eurovent for its air movement systems - a capacity/performance certification that has been made mandatory in Europe and is fast becoming a requirement in all regions. With the addition of the state-of-the-art testing facility, Ikhtebare, a 3rd party air conditioners testing facility built by Intertek Testing Services (ITS) and certified by Electrical Testing Labs (ETL) and accredited by the Saudi Accreditation Committee (SASO) for compliances with the international testing standards, Cooline is the only brand in the Middle East capable of guaranteeing product performance in compliance with local and international standards. It's no surprise that in 2003, Cooline received the Best GCC Brand of the Decade Award.

For more information, please visit our website www.cooline.com



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