



TECHNICAL GUIDE

SUNLINE PLUS™

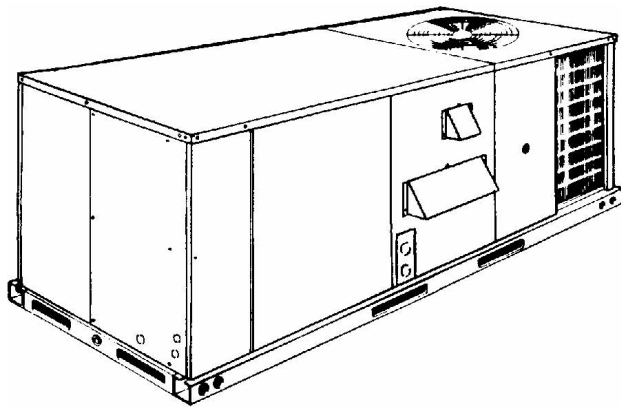
AIR-COOLED

AIR CONDITIONERS

D1EG/D1EE036, 048, & 060

3, 4, AND 5 NOMINAL TONS

11 - 11.5 SEER



FLEXIBLE EASY TO INSTALL SINGLE PACKAGE UNITS.

GENERAL

YORK Model DEE/DEG units are single package air conditioners designed for outdoor installation on a rooftop or a slab. These units can be equipped with field installed electric heaters for cooling/heating applications or factory installed gas heat. The units are completely assembled on rigid, permanently attached base rails. All piping, refrigerant charge, and electrical wiring is factory installed and tested. The units require only electric power and duct connections at the point of installation.

FEATURING

- COMMON FOOTPRINT / COMMON CABINET
- HIGH EFFICIENCY
- CONVERTIBLE AIRFLOW DESIGN
- OPTIONAL MOTORIZED AIR DAMPER
- OPTIONAL MANUAL OUTDOOR DAMPER
- FLEXIBLE INDOOR AIRFLOWS
- FULL PERIMETER BASE RAILS
- INSTALLER FRIENDLY CONTROL CIRCUIT
- EASY UTILITY CONNECTIONS
- 1" OR 2" FILTERS WITH NO MODIFICATIONS
- DIRECT DRIVE
- OPTIONAL BELT DRIVE
- 1 YEAR LIMITED WARRANTY
- COMPRESSORS 5 YEAR WARRANTY
- 10 YEAR LIMITED WARRANTY ON GAS-FIRED HEAT EXCHANGERS



TABLE OF CONTENTS

DESCRIPTION	3
FEATURES	3
FACTORY-INSTALLED OPTIONS	4
FIELD-INSTALLED ACCESSORIES	4
MECHANICAL SPECIFICATIONS	30

LIST OF FIGURES

<u>Fig.</u>	<u>Pg.</u>
1 SUNLINE PLUS COMPONENT LOCATION	5
2 POWER SUPPLY, POWER WIRING THREE PHASE	22
3 CONTROL WIRING - COOLING ONLY	22
4 CONTROL WIRING- COOLING & HEATING MULTI-STAGE	22
5 POWER SUPPLY, POWER WIRING SINGLE PHASE	22
6 CONTROL WIRING - COOLING/HEATING (24 VOLT THERMOSTAT)	22
7 CONTROL WIRING - COOLING/HEATING (ELECTRONIC THERMOSTAT)	23
8 UNIT DIMENSIONS WITH ECONOMIZER RAINHOOD	23
9 UNIT DIMENSIONS DEE 3, 4, & 5 TON	24
10 ACCESS PANELS AND DISCONNECT	24
11 UNIT DIMENSIONS DEG 3, 4, & 5 TON	25
12 DEE/DEG DIMENSIONS REAR VIEW - 3, 4, & 5 TON	26
13 DETAIL B UNIT DIMENSIONS WITH DAMPER/ RAINHOOD	27
14 UNIT & CURB APPLICATION	27
15 ROOF CURB DIMENSIONS DEE & DEG 3, 4, & 5 TON	28
16 CENTER OF GRAVITY	28
17 TYPICAL APPLICATIONS	29
18 TYPICAL ROOF TOP INSTALLATION	29

LIST OF TABLES

<u>Tbl.</u>	<u>Pg.</u>
1 CAPACITY RATINGS - COOLING / ELECTRIC HEATING	7
2 CAPACITY RATINGS - COOLING / GAS HEATING ...	7

3 SOUND POWER RATINGS	7
4 PHYSICAL DATA - BASIC UNIT	8
5 COOLING CAPACITIES - 3 TON (DEE / DEG036) ...	9
6 COOLING CAPACITIES - 4 TON (DEE / DEG048) ...	10
7 COOLING CAPACITIES - 5 TON (DEE / DEG060) ...	11
8 SUPPLY AIR BLOWER PERFORMANCE -DEE/ DEG036 W/ BELT DRIVE & SIDE DUCT	12
9 SUPPLY AIR BLOWER PERFORMANCE -DEE/ DEG048 W/ BELT DRIVE & SIDE DUCT	13
10 SUPPLY AIR BLOWER PERFORMANCE -DEE/ DEG060 W/ BELT DRIVE & SIDE DUCT	14
11 SUPPLY AIR BLOWER PERFORMANCE - DEE/ DEG036-060 W/ DIRECT DRIVE	15
12 STATIC RESISTANCES	15
13 MOTOR AND DRIVE DATA - BELT-DRIVE BLOWER	16
14 BASIC UNIT W/ DIRECT-DRIVE ELECTRICAL DATA	16
15 BASIC UNIT W/ BELT-DRIVE ELECTRICAL DATA ..	17
16 ELECTRICAL DATA COOLING/ELECTRIC HEAT W/ DIRECT DRIVE DEE036	18
17 ELECTRICAL DATA COOLING/ELECTRIC HEAT W/ DIRECT DRIVE DEE048	19
18 ELECTRIC HEAT CORRECTION FACTORS	19
19 FUSE BLOCK ACCESSORY	19
20 ELECTRICAL DATA COOLING/ELECTRIC HEAT W/ DIRECT DRIVE DEE060	20
21 ELECTRICAL DATA COOLING/ELECTRIC HEAT W/ BELT DRIVE DEE036 & 048	21
22 ELECTRICAL DATA COOLING/ELECTRIC HEAT W/ BELT DRIVE DEE060	22
23 UTILITIES ENTRY DATA	25
24 DEE/DEG UNIT CLEARANCES	26
25 ACCESSORY'S WEIGHT	29
26 UNIT WEIGHTS	29

DESCRIPTION

YORK Sunline Plus™ units are high efficiency, convertible, single package air conditioners with a common cabinet and a common roof curb for the 3, 4 and 5 ton sizes. The units were designed for light commercial and commercial applications. They can easily be installed on a roof curb, slab, roof jack or frame.

All units are self-contained and assembled on rigid full perimeter base rails with fork lift slots on three sides and holes for overhead rigging. Every unit is completely piped, wired, charged and tested at the factory to provide for a quick and easy field installation.

The units are available in cooling only, and cooling with gas heat. Electric heaters are available as field-installed accessories.

Both bottom and side duct connections are available without having to swap panels. The installer simply removes the duct covers for the desired configuration. Economizers may be used on either bottom and side duct applications with no modifications required.

All models include a 5-year limited warranty on compressors, a 10-year limited warranty on gas-fired heat exchangers and a 1-year limited warranty on other parts.

FEATURES

COMMON FOOTPRINT/COMMON CABINET -- All model sizes and configurations share a common cabinet and a common roof curb. The installer has the flexibility of setting one curb and placing the proper tonnage unit on that curb after the internal load has been determined. He can even decide between gas or electric heat after the curb has been set.

HIGH EFFICIENCY -- All units have a high cooling efficiency of at least 11.0 SEER and gas / electric models have an AFUE as high as 80.9%. All efficiencies exceed legislated minimum levels and provide low operating costs.

CONVERTIBLE AIRFLOW DESIGN -- Both the side and bottom duct openings are covered when they leave the factory. If a side supply / side return is desired, you simply remove the two side duct covers from the outside of the unit and discard them. If a bottom supply / bottom return is desired, you simply remove the two knockout panels from the base of the unit and discard them. No panel cutting or swapping is required! Convertible airflow design allows maximum field flexibility and minimum inventory.

FACTORY-INSTALLED OPTIONS -- Economizers can be installed at the factory. The economizers are shipped installed and wired. Only the rain hood needs to be field assembled and installed. Field labor dollars can be saved by having the components arrive already installed.

Adjustable belt drive blowers are available on all models from the factory for complete airflow flexibility.

FIELD-INSTALLED ACCESSORIES -- Accessories were designed for quick and easy installation. The motorized damper and economizers simply slide in, and electrical connections are made by modular plugs. Electric heaters mount easily, and knockouts are provided in the internal partitions to connect the elements to the control box single point kit.

The motorized air damper includes a slid-in/plug-in damper assembly with a rainhood and filters. The outdoor air dampers open when the indoor fan motor is energized. The damper is capable of providing 0% through 100% of outdoor return air opening.

The manual outdoor damper provides 0% through 35% or 0% through 100% of return air opening (field adjustable). Designed for duct mounted side or bottom supply/return applications. Includes rain hood assembly and filter.

The 14" high roof curb is shipped knocked down. An insulated deck is not required because the bottom of the unit is insulated.

Low ambient controls are available to provide stable unit operation at outdoor temperatures down to 0 °F.

Propane, high altitude and low NOx kits are also available to cover all gas heating applications.

WIDE RANGE OF INDOOR AIRFLOWS -- All models operate over a wide range of design conditions with a 3-speed direct-drive fan motor. Belt-drive blowers are also available on all models.

FULL PERIMETER BASE RAILS -- The permanently attached base rails provide a solid foundation for the entire unit and protect the unit during shipment. The rails provide fork lift access from 3 sides, and rigging holes are also provided so that an overhead crane can be used to place the units on a roof.

SYSTEM PROTECTION -- Internal overload protection is standard on all compressors. Every unit has a liquid line filter-drier, high and low pressure/loss of charge switches and a suction line freeze-stat to protect all system components. All units will provide cooling at ambient temperatures down to 45 °F.

UTILITY CONNECTIONS MADE EASY -- Gas and electric utility knockouts are provided in the unit base as well as the side of the unit. A clearly identified location is provided to mount a field supplied electrical disconnect switch. Utility connections can be made quickly and with a minimum amount of field labor.

SIMPLE CONTROL CIRCUIT -- A low voltage printed circuit board contains a compressor lockout indicator light and a low

voltage terminal strip. An additional set of pin connectors is also provided to simplify the field interface of external controls. Mate--n--lock plug connectors are used where line and low voltage wires pass through internal bulkheads. This allows for easier troubleshooting and component replacement. The electrical control box is not located in the compressor compartment so the access cover can be removed for troubleshooting without affecting the normal system operating pressures.

AIR FILTERS -- Units are shipped with 1" throwaway filters. The unit filter racks can accommodate 1" or 2" filters without any modifications.

FACTORY-INSTALLED OPTIONS

ECONOMIZERS: Units equipped with a factory-installed economizer option have dampers that are positioned by a spring return, fully modulating damper actuator and are capable of introducing up to 100% outdoor air. As the outdoor air intake dampers open, the return air dampers close. The changeover from mechanical refrigeration to economizer operation is determined by a single input electronic enthalpy control or by a dual input electronic enthalpy control. Simultaneous compressor and economizer operation is also possible.

The single enthalpy system contains a sensor that monitors the outdoor air which automatically operates the damper actuator allowing the dampers to open or close.

The dual enthalpy system contains a second sensor that monitors both the temperature and the humidity of the return air in addition to the outdoor air sensor described for a single enthalpy system. The logic module compares the inputs from both sensors and switches to economizer operation whenever the outdoor air is cooler than the return air for maximum efficiency of the economizer system.

The economizer is completely wired and installed at the factory. Only the outdoor air hood, including its filters, need be assembled and installed in the field.

BELT DRIVE BLOWERS: Adjustable belt-drive blowers providing maximum flexibility to handle many airflow requirements, are available on all models.

FIELD-INSTALLED ACCESSORIES

SINGLE INPUT ELECTRONIC ENTHALPY ECONOMIZER - Includes a slide-in / plug-in damper assembly with fully modulating spring return motor actuator capable of introducing up to 100% outdoor air, one outdoor air electronic enthalpy sensor and a rain hood with filters. The rain hood is painted to match the basic unit and must be field-assembled before installation. Economizer dampers are 2% low leakage type.

DUAL INPUT ELECTRONIC ENTHALPY ECONOMIZER - Includes the same damper system and rain hood with filters as described for a single enthalpy economizer except this accessory contains two enthalpy sensors. It uses a differential enthalpy control that compares the outdoor air versus the return air. The logic module then optimizes the economizer operation for additional savings over the single input economizer.

MOTORIZED AIR DAMPER - Includes a slid-in/plug-in damper assembly with a rainhood and filters. The outdoor air dampers open when the indoor fan motor is energized. The damper is capable of providing 0% through 100% of outdoor return air opening.

MANUAL OUTDOOR DAMPER - Provides 0% through 35% or 0% through 100% of return air opening (field adjustable). Designed for duct mounted side or bottom supply/return applications. Includes rain hood assembly and filter.

ELECTRIC HEATERS - Include nickel chromium elements, a terminal block, fuses (where required by UL), all the necessary connectors and hardware. All heaters utilize single point power supply hookup. Capacities from 5 KW through 30 KW heating are available.

FUSE BLOCK KITS - These kits have a fuse box with a fuse block and fuses. They're available for all 460-3-60 volt heaters and 208/230-3-60 volt heaters 7 KW and smaller.

OUTDOOR THERMOSTAT - A 24-volt thermostat providing two stages of control for units equipped with electric heat accessories.

ROOF CURB - This 14" high full perimeter roof curb is shipped knocked down for field assembly and contains duct supports that can easily be shifted for the desired unit duct arrangement. No insulated deck is required because the unit underside is insulated.

START ASSIST KIT - Provides increased starting torque for single phase units in areas with low voltage conditions. It contains a 12.5 OHM PTCR temperature resistor with a support clip and hardware for mounting.

LOW AMBIENT KIT - A head pressure controller maintains stable system operation by reducing the speed of the condenser fan motor when the outdoor temperature is between 45 and 0 °F. Condenser fan motors with ball bearings and heavier windings are also available for these low ambient applications.

ANTI-RECYCLE TIMER - A timer to prevent the unit compressor from short cycling. It assures a 5-minute off-time between compressor cycles.

PROPANE CONVERSION KIT - Converts a gas-fired heater from natural gas to propane. It contains main burner orifices, a pilot orifice and a regulator spring.

LOW NOx KIT (natural gas furnaces only) - Contains five stainless steel expanded metal sheets for mounting into the heat exchanger tubes to meet the California low nitrous oxide emission requirements.

HIGH ALTITUDE CONVERSION (NATURAL AND PROPANE) - Provides orifices for proper furnace operation at altitudes up to 6000 feet. For propane applications, the propane conversion kit will also be required.

GAS PIPING - This kit contains 1/2" pipe nipples, fittings and gas cock (including panel access gaskets) required for bottom gas supply connection with external shut-off.

OUTDOOR COIL GUARD - Consists of grille-type sections for installation over the outdoor coil to protect it from damage.

WALL THERMOSTAT - The units are designed to operate with 24-volt electronic and electro-mechanical thermostats. All units can operate with single stage heat / single stage cool thermostats - with or without the economizer.

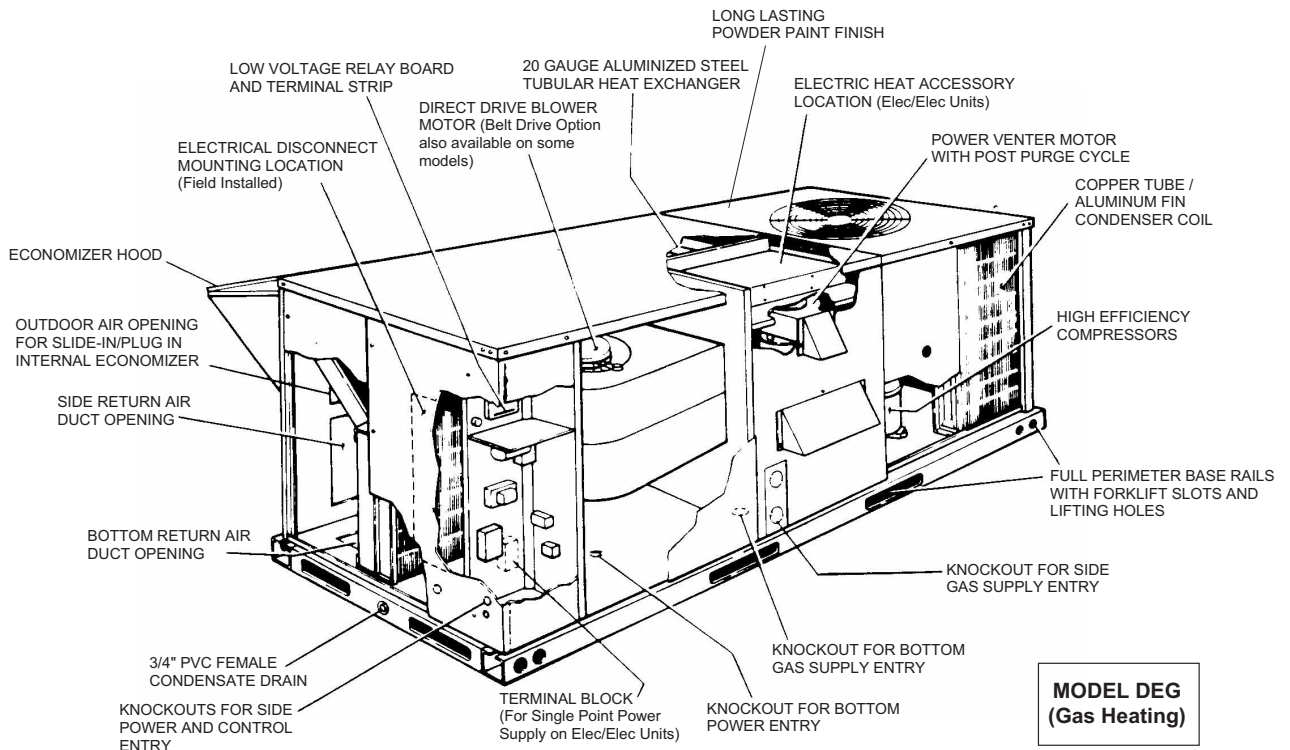


FIGURE 1 - SUNLINE PLUS COMPONENT LOCATION

TABLE 1: CAPACITY RATINGS - COOLING / ELECTRIC HEATING

MODEL	ARI RATINGS ¹				NOMINAL ELECTRIC HEAT CAPACITY ² (kW)		
	COOLING CAPACITY 80 / 67-95°F			SOUND RATING ³ (dBels)	240V	480V	600V
	MBH	SEER ⁴	EER ⁵				
DEE036	42.5	11.5	10.10	86.0	5, 7, 10, 15 & 20	7, 10, 15 & 20	10, 15, & 20
DEE048	49.5	11.0	10.0	86.0	5, 7, 10, 15 & 20	7, 10, 15 & 20	10, 15, & 20
DEE060	58.5	11.0	10.05	86.0	5, 7, 10, 15, 20, & 30	7, 10, 15, 10, & 30	10, 15, 20 & 30

1. Certified in accordance with the Unitary Small Equipment certification program, which is based on ARI Standard 210/240.
2. Heaters are available as accessories - all with single point power supply Not ARI required
3. Rated in accordance with ARI Standard 270.
4. SEER = Seasonal Energy Efficiency Ratio - the total cooling output in BTU's during a normal annual usage period for cooling divided by the total electric power input in watt-hours during the same period.
5. EER = Energy Efficiency Ratio - the cooling capacity in BTU's per hour (BTUH) divided by the power input in watts at any given set of rating conditions, expressed in BTUH per watt (BTUH/watt).

TABLE 2: CAPACITY RATINGS - COOLING / GAS HEATING

MODEL	ARI RATINGS ¹				GAS HEAT CAPACITY						
	COOLING CAPACITY 80 / 67-95°F			SOUND RATING ² (dBels)	INPUT (MBH)	OUTPUT (MBH)	AFUE ³ (%)	S.S.E. ⁴ (%)	TEMP. RISE (°F)	GASE LINE SIZE (in. O.D.)	
	MBH	SEER ⁵	EER ⁶								
DEG036N040	42.5	11.5	10.1	86	50	40	80.9	81.6	15-45	1/2	
DEG036N079	42.5	11.5	10.1	86	100	79	80.5	80.8	40-70	1/2	
DEG048N060	49.5	11.0	10.0	86	75	59	80.9	81.6	25-55	1/2	
DEG048N099	49.5	11.0	10.0	86	125	99	80.3	80.6	45-75	1/2	
DEG060N079	58.5	11.0	10.05	86	100	79	80.5	80.8	25-55	1/2	
DEG060N099	58.5	11.0	10.05	86	125	99	80.3	80.6	35-65	1/2	

1. Ratings are in accordance with ARI Standard 210.
2. Sound ratings are in accordance with ARI Standard 270. Not ARI required
3. AFUE = Annual Fuel Utilization Efficiency - determined in accordance with DOE test procedure.
4. S.S.E. = Steady State Efficiency (Percent Output).
5. SEER = Seasonal Energy Efficiency Ratio - the total cooling output in BTU's during a normal annual usage period for cooling divided by the total electric power input in watt-hours during the same period.
6. EER = Energy Efficiency Ratio - the cooling capacity in BTU's per hour (BTUH) divided by the power input in watts at any given set of rating conditions, expressed in BTUH per watt (BTUH/watt).

TABLE 3: SOUND POWER RATINGS¹

UNIT SIZE	CFM	ESP	BLOWER		SOUND POWER (dB 10 ⁻¹² WATTS)								SWL dB(A)	dBA @ 10Ft ²
					OCTAVE BAND CENTERLINE FREQUENCY (Hz)									
					63	125	250	500	1000	2000	4000	8000		
036	1200	0.60	LOW	0.60	84	84	74	67	69	62	57	52	74	41
048	1600	0.55	HIGH	0.80	85	85	75	68	70	63	58	53	75	42
060	2000	0.45	HIGH	1.00	86	86	76	69	71	64	59	54	76	43

1. These values have been accessed using a model of sound propagation from a point source into the hemispheric free field. The dBA values provided are to be used for reference only. Calculation of dBA values cover matters of system design and the fan manufacture has no way of knowing the details of each system. This constitutes an exception to any specification or guarantee requiring a dBA value or sound data in any other form than sound power level ratings.
2. At a distance of 10 feet from the blower.

TABLE 4: PHYSICAL DATA - BASIC UNIT

MODELS		DEE/DEG		
		036	048	060
EVAPORATOR BLOWER	Centrifugal Blower (Dia. x Wd. in.)	12 x 10	12 x 10	12 x 10
	Fan Motor HP (Direct - Drive)	1/2	3/4	1
	Fan Motor HP (Belt - Drive)	1.5	1.5	1.5
EVAPORATOR COIL	Rows Deep	3	3	3
	Fins Per Inch	13	13	13
	Face Area (Sq. Ft.)	3.6	4.3	5.1
CONDENSER FAN	Propeller Dia. (in.)	22	22	22
	Fan Motor HP	1/2	1/2	1/2
	Nom. CFM. Total	4,500	4,200	4,500
CONDENSER COIL	Rows Deep	2	2	2
	Fins Per Inch	18	18	18
	Face Area (Sq. Ft.)	17.1	17.1	17.1
AIR FILTERS ¹	Quantity Per Unit (15" x 20" x 1")	2	2	2
	Quantity Per Unit (14" x 25" x 1")	1	1	1
	Total Face Area (Sq. Ft.)	6.6	6.6	6.6
SYSTEM CHARGE	Refrigerant 22 (Lbs./Oz.)	9/12	9/8	9/8
COMPRESSOR	Quantity Per Unit: (Hermetic Type)	1 / Recpt	1 / Recpt	1 / Scroll

¹. Filter racks are adapted for 1" or 2" thick filters.

TABLE 5: COOLING CAPACITIES - 3 TON (DEE / DEG036)

AIR ON EVAPORATOR COIL		TEMPERATURE OF AIR ON CONDENSER COIL																	
		85°F								95°F									
		TOTAL CAP ¹ MBH	POWER INPUT ² kW	SENSIBLE CAPACITY ¹ , MBH						TOTAL CAP ¹ MBH	POWER INPUT ² kW	SENSIBLE CAPACITY ¹ , MBH							
				ENTERING DRY BULB, °F								ENTERING DRY BULB, °F							
CFM	WB °F			86	83	80	77	74	71	68			86	83	80	77	74	71	68
1500	72	55	3.4	35	31	26	22	18	-	-	51	3.7	35	30	26	21	17	-	-
	67	52	3.3	47	42	38	33	29	24	20	48	3.6	45	41	36	32	28	23	19
	62	42	3.2	42	42	42	37	33	28	24	39	3.5	39	39	39	34	30	25	21
	57	42	3.2	42	42	42	38	33	29	24	39	3.5	39	39	39	35	30	26	21
1350	72	51	3.3	32	28	24	20	16	-	-	49	3.6	32	28	24	20	16	-	-
	67	49	3.3	42	38	34	30	26	22	18	47	3.5	42	38	34	30	26	22	18
	62	39	3.2	39	39	37	33	29	25	21	37	3.5	37	37	37	33	29	25	21
	57	40	3.2	40	40	38	34	30	26	22	38	3.5	38	38	38	34	30	26	22
1200	72	48	3.2	28	24	21	17	14	-	-	48	3.6	29	25	22	18	15	-	-
	67	46	3.3	37	34	30	27	23	19	16	46	3.5	39	36	32	38	25	21	18
	62	36	3.2	36	36	33	29	26	22	19	36	3.5	36	36	35	31	28	24	21
	57	37	3.2	37	37	35	31	27	24	20	37	3.4	37	37	37	33	30	26	22
1050	72	46	3.3	26	23	19	16	13	-	-	45	3.6	26	23	20	16	13	-	-
	67	44	3.3	34	31	28	25	22	18	15	43	3.5	35	32	28	25	22	19	16
	62	35	3.2	35	34	31	28	24	21	18	34	3.4	34	33	31	28	25	22	19
	57	36	3.2	36	35	32	29	26	23	20	35	3.4	35	34	33	30	27	23	20
900	72	45	3.3	24	21	18	15	13	-	-	43	3.5	23	20	17	15	12	-	-
	67	42	3.2	31	29	26	23	20	17	15	40	3.5	30	28	25	22	19	16	14
	62	34	3.2	34	32	26	26	23	20	18	32	3.4	32	30	28	25	22	19	17
	57	35	3.1	35	33	30	27	25	22	19	33	3.4	33	32	29	26	24	21	18

AIR ON EVAPORATOR COIL		TEMPERATURE OF AIR ON CONDENSER COIL																	
		105°F								115°F									
		TOTAL CAP ¹ MBH	POWER INPUT ² kW	SENSIBLE CAPACITY ¹ , MBH						TOTAL CAP ¹ MBH	POWER INPUT ² kW	SENSIBLE CAPACITY ¹ , MBH							
				ENTERING DRY BULB, °F								ENTERING DRY BULB, °F							
CFM	WB °F			86	83	80	77	74	71	68			86	83	80	77	74	71	68
1500	72	47	3.9	33	29	25	20	16	-	-	43	4.1	32	28	23	19	14	-	-
	67	44	3.8	43	39	35	30	26	22	17	40	4.1	40	38	33	29	24	20	16
	62	36	3.7	36	36	36	31	27	22	18	33	4.0	33	33	33	28	24	19	15
	57	36	3.7	36	36	36	31	27	23	18	33	3.9	33	33	33	28	24	20	15
1350	72	44	3.9	30	26	22	18	14	-	-	39	4.1	28	24	20	16	12	-	-
	67	42	3.8	39	36	32	28	24	20	16	37	4.0	36	33	29	25	21	17	13
	62	34	3.7	34	34	33	29	25	21	17	30	4.0	30	30	30	26	22	18	14
	57	34	3.7	34	34	34	30	26	22	18	30	3.9	30	30	31	27	23	19	15
1200	72	42	3.8	27	23	20	16	12	-	-	36	4.1	24	21	17	14	10	-	-
	67	40	3.8	36	32	29	25	22	18	14	34	4.0	33	29	25	22	18	15	11
	62	32	3.7	32	32	31	28	24	20	17	27	3.9	27	27	28	24	20	17	13
	57	32	3.7	32	32	33	29	26	22	19	28	3.9	28	28	29	26	22	18	15
1050	72	40	3.8	24	21	18	15	12	-	-	35	4.1	22	19	16	13	10	-	-
	67	38	3.7	32	29	26	23	19	16	13	33	4.0	30	26	23	20	17	14	11
	62	30	3.7	30	30	28	25	22	19	16	27	3.9	27	27	26	22	19	16	13
	57	31	3.6	31	31	30	27	24	20	17	27	3.9	27	27	27	24	21	17	14
900	72	38	3.8	22	19	16	13	11	-	-	34	4.0	20	18	15	12	9	-	-
	67	36	3.7	29	26	23	20	17	15	12	32	4.0	27	24	21	18	16	13	10
	62	29	3.6	29	28	26	23	20	17	15	26	3.9	26	26	24	21	18	15	13
	57	30	3.6	30	29	27	24	21	19	16	26	3.9	26	26	25	22	19	17	14

1. These capacities are gross ratings. For net capacity, determine the kW of the supply air blower motor from Table 8 or 11, multiply this value by 3.425 MBH/kW to determine the motor heat, and deduct this heat from the gross capacity of the unit.
2. These ratings include the compressor and the condenser fan motors but not the supply air blower motor. The total condenser fan motor power input is 0.36kW. Refer to Table 8 or 11 for the kW of the supply air blower motor.

 NOMINAL RATING


 ALL SENSIBLE CAPACITY

TABLE 6: COOLING CAPACITIES - 4 TON (DEE / DEG048)

AIR ON EVAPORATOR COIL		TEMPERATURE OF AIR ON CONDENSER COIL																	
		85°F								95°F									
		TOTAL CAP ¹ MBH	POWER INPUT ² kW	SENSIBLE CAPACITY ¹ , MBH						TOTAL CAP ¹ MBH	POWER INPUT ² kW	SENSIBLE CAPACITY ¹ , MBH							
				ENTERING DRY BULB, °F								ENTERING DRY BULB, °F							
CFM	WB °F			86	83	80	77	74	71	68			86	83	80	77	74	71	68
2000	72	64	3.9	45	39	33	27	21	-	-	60	4.2	44	38	32	26	20	-	-
	67	57	3.8	55	49	43	37	31	25	19	53	4.1	53	47	41	35	29	23	17
	62	54	3.8	54	54	53	47	41	35	29	50	4.0	50	50	50	44	38	32	26
	57	54	3.8	54	54	54	48	42	36	30	50	4.0	50	50	50	46	40	34	28
1800	72	62	3.9	42	36	31	25	20	-	-	58	4.2	41	35	30	24	19	-	-
	67	55	3.8	51	46	40	35	30	24	19	52	4.1	50	44	39	34	28	23	18
	62	52	3.8	52	52	49	44	39	33	28	49	4.1	49	49	47	42	37	31	26
	57	52	3.8	52	52	51	45	40	35	29	49	4.1	49	49	49	44	38	33	27
1600	72	59	3.9	38	33	29	24	19	-	-	57	4.2	38	33	28	23	18	-	-
	67	54	3.8	48	43	38	33	29	24	19	52	4.2	47	42	37	32	28	23	18
	62	50	3.7	50	50	46	41	36	32	27	47	4.1	47	47	45	40	35	31	26
	57	50	3.7	50	50	47	42	38	33	28	47	4.1	47	47	46	41	37	32	27
1400	72	58	3.8	35	31	27	23	18	-	-	55	4.2	34	30	26	22	17	-	-
	67	52	3.8	44	39	35	31	27	22	18	49	4.2	42	38	34	30	26	21	17
	62	49	3.7	48	47	43	39	34	30	26	46	4.1	46	45	42	37	33	29	25
	57	49	3.7	49	48	44	40	36	31	27	46	4.1	46	46	43	38	34	30	26
1200	72	57	3.8	32	29	25	21	17	-	-	53	4.2	31	28	24	20	16	-	-
	67	50	3.8	40	36	32	29	25	21	17	47	4.2	38	35	31	27	23	20	16
	62	48	3.7	47	44	40	36	33	29	25	45	4.1	45	42	38	34	31	27	23
	57	48	3.7	48	45	41	37	34	30	26	45	4.1	45	43	39	35	32	28	24

AIR ON EVAPORATOR COIL		TEMPERATURE OF AIR ON CONDENSER COIL																	
		105°F								115°F									
		TOTAL CAP ¹ MBH	POWER INPUT ² kW	SENSIBLE CAPACITY ¹ , MBH						TOTAL CAP ¹ MBH	POWER INPUT ² kW	SENSIBLE CAPACITY ¹ , MBH							
				ENTERING DRY BULB, °F								ENTERING DRY BULB, °F							
CFM	WB °F			86	83	80	77	74	71	68			86	83	80	77	74	71	68
2000	72	56	4.7	42	36	30	25	19	-	-	53	5.2	41	35	29	23	17	-	-
	67	50	4.6	50	45	39	33	28	22	16	47	5.1	47	44	38	32	26	20	14
	62	47	4.5	47	47	47	41	35	29	23	44	5.0	44	44	44	38	32	26	20
	57	47	4.5	47	47	47	44	38	32	26	44	5.0	44	44	44	42	36	30	24
1800	72	54	4.7	39	34	29	23	17	-	-	51	5.1	38	33	27	22	17	-	-
	67	49	4.6	47	43	37	32	27	21	16	46	5.1	45	41	36	31	25	20	14
	62	46	4.5	46	46	45	40	34	29	23	43	5.0	43	43	43	37	32	26	21
	57	46	4.5	46	46	46	42	36	31	26	43	5.0	43	43	43	40	34	29	24
1600	72	53	4.7	36	31	27	22	17	-	-	49	5.1	35	30	25	21	16	-	-
	67	48	4.6	45	40	35	31	26	21	16	44	5.1	43	39	34	29	24	19	15
	62	44	4.6	44	44	43	38	33	29	24	41	5.0	41	41	41	36	31	26	22
	57	44	4.5	44	44	44	39	34	30	25	41	5.0	41	41	41	37	32	28	23
1400	72	51	4.7	33	29	25	21	16	-	-	48	5.1	32	28	24	20	15	-	-
	67	46	4.6	41	37	33	28	24	20	16	43	5.0	40	35	31	27	23	19	14
	62	43	4.5	43	42	40	36	31	27	23	40	5.0	40	40	38	34	30	25	21
	57	43	4.5	43	43	41	37	32	28	24	40	5.0	40	40	39	35	31	26	22
1200	72	50	4.7	30	27	23	19	16	-	-	47	5.1	30	26	22	18	15	-	-
	67	44	4.6	37	33	30	26	22	19	15	42	5.0	36	32	29	25	21	18	14
	62	42	4.5	42	41	37	33	29	26	22	39	5.0	39	39	35	32	28	24	21
	57	42	4.5	42	41	38	34	30	27	23	39	5.0	39	39	36	33	29	25	22

1. These capacities are gross ratings. For net capacity, determine the kW of the supply air blower motor from Table 9 or 11, multiply this value by 3.425 MBH/kW to determine the motor heat, and deduct this heat from the gross capacity of the unit.
2. These ratings include the compressor and the condenser fan motors but not the supply air blower motor. The total condenser fan motor power input is 0.36kW. Refer to Tables 9 or 11 for the kW of the supply air blower motor.

 NOMINAL RATING

 ALL SENSIBLE CAPACITY

TABLE 7: COOLING CAPACITIES - 5 TON (DEE / DEG060)

AIR ON EVAPORATOR COIL		TEMPERATURE OF AIR ON CONDENSER COIL																	
		85°F								95°F									
		TOTAL CAP. ¹ MBH	POWER INPUT ² kW	SENSIBLE CAPACITY ¹ , MBH						TOTAL CAP. ¹ MBH	POWER INPUT ² kW.	SENSIBLE CAPACITY ¹ , MBH							
				ENTERING DRY BULB, °F								ENTERING DRY BULB, °F							
CFM	WB °F			86	83	80	77	74	71	68			86	83	80	77	74	71	68
2500	72	75	4.6	53	46	38	31	23	-	-	73	5.0	53	46	38	31	23	-	-
	67	67	4.5	64	56	49	41	34	26	19	65	4.9	64	56	49	41	34	26	19
	62	62	4.5	62	62	62	54	47	39	32	60	4.9	60	60	60	53	46	38	31
	57	56	4.4	56	56	56	48	41	33	26	55	4.8	55	55	55	47	40	32	25
2250	72	74	4.6	51	44	37	31	24	-	-	72	5.0	50	43	37	30	23	-	-
	67	67	4.5	62	55	48	42	35	28	21	64	5.0	61	54	47	41	34	27	20
	62	61	4.5	61	61	61	54	47	40	34	59	4.9	59	59	59	52	45	38	32
2000	72	73	4.5	49	43	37	31	25	-	-	70	5.0	47	41	35	29	23	-	-
	67	66	4.5	60	54	48	42	36	30	24	63	5.0	58	52	46	40	34	28	22
	62	60	4.4	60	60	60	54	48	42	36	58	4.9	58	58	57	51	45	39	33
1750	72	72	4.5	45	40	34	29	24	-	-	68	5.0	43	38	33	27	22	-	-
	67	65	4.5	55	50	44	39	34	29	23	61	4.9	53	47	42	37	32	26	21
	62	60	4.4	60	59	56	50	45	40	35	56	4.9	56	56	53	48	42	37	32
	57	54	4.4	54	53	50	45	40	34	29	50	4.8	50	50	48	42	37	32	27
1500	72	71	4.5	41	37	32	27	23	-	-	66	5.0	40	35	30	26	21	-	-
	67	63	4.5	50	46	41	36	32	27	22	58	4.9	48	43	39	34	29	25	20
	62	59	4.4	59	57	52	47	43	38	34	54	4.9	54	54	49	44	40	35	31
	57	53	4.4	53	52	47	42	38	33	28	49	4.8	49	49	44	40	35	30	26

AIR ON EVAPORATOR COIL		TEMPERATURE OF AIR ON CONDENSER COIL																	
		105°F								115°F									
		TOTAL CAP. ¹ MBH	POWER INPUT ² kW.	SENSIBLE CAPACITY ¹ , MBH						TOTAL CAP. ¹ MBH	POWER INPUT ² kW.	SENSIBLE CAPACITY ¹ , MBH							
				ENTERING DRY BULB, °F								ENTERING DRY BULB, °F							
CFM	WB °F			86	83	80	77	74	71	68			86	83	80	77	74	71	68
2500	72	66	5.5	51	44	36	29	21	-	-	60	6.0	49	41	34	26	19	-	-
	67	59	5.5	58	54	46	39	31	24	16	53	6.0	53	51	43	36	28	21	13
	62	55	5.4	55	55	55	47	40	32	25	49	5.9	49	49	49	42	34	27	19
	57	49	5.4	49	49	49	42	35	27	20	44	5.9	44	44	44	37	29	22	15
2250	72	65	5.5	48	42	35	28	21	-	-	58	6.0	46	40	33	26	20	-	-
	67	58	5.5	57	52	45	38	31	25	18	52	6.0	52	49	43	36	29	22	16
	62	54	5.4	54	54	54	48	41	34	28	48	5.9	48	48	48	44	37	30	24
2000	72	63	5.5	45	39	33	28	22	-	-	57	6.0	44	38	32	26	20	-	-
	67	58	5.5	55	50	44	38	32	26	20	52	6.0	52	48	42	36	30	24	18
	62	52	5.4	52	52	52	48	42	36	30	47	5.9	47	47	47	46	40	34	28
1750	72	60	5.5	47	47	47	43	37	31	25	43	5.9	43	43	43	41	35	29	23
	67	55	5.5	42	36	31	26	21	-	-	55	6.1	40	35	30	24	19	-	-
	62	51	5.4	51	51	50	45	40	35	29	50	6.0	48	43	38	33	28	22	17
	57	46	5.4	46	46	45	40	35	30	24	41	5.9	41	41	41	38	33	27	22
1500	72	60	5.5	38	33	29	24	19	-	-	53	6.1	36	32	27	23	18	-	-
	67	53	5.5	46	41	37	32	27	23	18	47	6.1	44	39	35	30	25	21	16
	62	49	5.4	49	49	47	42	37	33	28	44	6.0	44	44	44	39	35	30	25
	57	44	5.4	44	44	42	37	33	28	23	40	6.0	40	40	40	35	30	26	21

1. These capacities are gross ratings. For net capacity, determine the kW of the supply air blower motor from Table 10 or 11, multiply this value by 3.425 MBH/kW to determine the motor heat, and deduct this heat from the gross capacity of the unit.
2. These ratings include the compressor and the condenser fan motors but not the supply air blower motor. The total condenser fan motor power input is 0.36kW. Refer to Tables 10 or 11 for the kW of the supply air blower motor.

NOMINAL RATING

ALL SENSIBLE CAPACITY

TABLE 8: SUPPLY AIR BLOWER PERFORMANCE -DEE/DEG036 W/ BELT DRIVE & SIDE DUCT^{1 2}

MODEL DEE/DEG	AIR FLOW CFM	AVAILABLE EXTERNAL STATIC PRESSURE - IWG ³													
		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
		RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS
036	2000	843	860	880	925	919	1005	956	1065	993	1145	1030	1195	1067	1235
	1900	817	775	854	850	893	920	930	995	970	1065	1008	1125	1046	1170
	1800	790	700	828	760	867	840	906	905	944	980	985	1040	1025	1100
	1700	-	-	802	670	840	745	881	815	920	900	961	970	1001	1030
	1600	-	-	-	-	818	665	858	740	898	820	940	890	980	950
	1500	-	-	-	-	-	-	842	695	882	755	922	835	962	895
	1400	-	-	-	-	-	-	833	650	867	705	904	765	942	820
	1300	-	-	-	-	-	-	-	-	858	665	893	725	932	785
	1200	-	-	-	-	-	-	-	-	847	640	880	680	916	730

MODEL DEE/DEG	AIR FLOW CFM	AVAILABLE EXTERNAL STATIC PRESSURE - IWG ³													
		0.90		1.00		1.10		1.20		1.30		1.40		1.50	
		RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS
036	2000	1103	1270	-	-	-	-	-	-	-	-	-	-	-	-
	1900	1085	1210	-	-	-	-	-	-	-	-	-	-	-	-
	1800	1064	1145	1102	1180	-	-	-	-	-	-	-	-	-	-
	1700	1040	1075	1081	1115	1121	1140	-	-	-	-	-	-	-	-
	1600	1020	1005	1060	1050	1100	1085	-	-	-	-	-	-	-	-
	1500	1003	945	1044	995	1086	1035	-	-	-	-	-	-	-	-
	1400	982	880	1024	920	1067	965	1107	1000	-	-	-	-	-	-
	1300	970	835	1010	870	1053	920	1099	960	-	-	-	-	-	-
	1200	953	780	992	815	1034	855	1080	905	-	-	-	-	-	-

1. 230/460/575 Volts

2. For 208 Volts multiply values by 0.95.

3. Includes allowances for a wet evaporator coil, 1" filters, and the heat exchangers. Refer to Table 12 for resistance values on applications other than gas / electric units with side duct airflows.

TABLE 9: SUPPLY AIR BLOWER PERFORMANCE -DEE/DEG048 W/ BELT DRIVE & SIDE DUCT^{1 2}

MODEL DEE/DEG	AIR FLOW CFM	AVAILABLE EXTERNAL STATIC PRESSURE - IWG ³													
		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
		RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS
048	2000	843	860	880	925	919	1005	956	1065	993	1145	1030	1195	1067	1235
	1900	817	775	854	850	893	920	930	995	970	1065	1008	1125	1046	1170
	1800	790	700	828	760	867	840	906	905	944	980	985	1040	1025	1100
	1700	-	-	802	670	840	745	881	815	920	900	961	970	1001	1030
	1600	-	-	-	-	818	665	858	740	898	820	940	890	980	950
	1500	-	-	-	-	-	-	842	695	882	755	922	835	962	895
	1400	-	-	-	-	-	-	833	650	867	705	904	765	942	820
	1300	-	-	-	-	-	-	-	-	858	665	893	725	932	785
	1200	-	-	-	-	-	-	-	-	847	640	880	680	916	730

MODEL DEE/DEG	AIR FLOW CFM	AVAILABLE EXTERNAL STATIC PRESSURE - IWG ³													
		0.90		1.00		1.10		1.20		1.30		1.40		1.50	
		RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS
048	2000	1103	1270	-	-	-	-	-	-	-	-	-	-	-	-
	1900	1085	1210	-	-	-	-	-	-	-	-	-	-	-	-
	1800	1064	1145	1102	1180	-	-	-	-	-	-	-	-	-	-
	1700	1040	1075	1081	1115	1121	1140	-	-	-	-	-	-	-	-
	1600	1020	1005	1060	1050	1100	1085	-	-	-	-	-	-	-	-
	1500	1003	945	1044	995	1086	1035	-	-	-	-	-	-	-	-
	1400	982	880	1024	920	1067	965	1107	1000	-	-	-	-	-	-
	1300	970	835	1010	870	1053	920	1099	960	-	-	-	-	-	-
	1200	953	780	992	815	1034	855	1080	905	-	-	-	-	-	-

1. 230/460/575 Volts
2. For 208 Volts multiply values by 0.95.
3. Includes allowances for a wet evaporator coil, 1" filters, and the heat exchangers. Refer to Table 12 for resistance values on applications other than gas / electric units with side duct airflows.

TABLE 10: SUPPLY AIR BLOWER PERFORMANCE -DEE/DEG060 W/ BELT DRIVE & SIDE DUCT^{1 2}

MODEL DEE/DEG	AIR FLOW CFM	AVAILABLE EXTERNAL STATIC PRESSURE - IWG ³													
		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
		RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS
060	2500	1059	1560	1077	1590	1095	1630	1114	1650	1134	1660	1158	1685	1181	1720
	2400	1032	1405	1054	1470	1074	1525	1094	1560	1116	1595	1140	1620	1167	1640
	2300	1005	1260	1024	1275	1049	1370	1069	1440	1090	1475	1116	1505	1142	1535
	2200	980	1160	1002	1170	1022	1190	1044	1250	1066	1350	1090	1410	1117	1440
	2100	930	1060	957	1070	983	1080	1010	1100	1039	1160	1064	1260	1092	1340
	2000	877	950	908	975	941	1000	976	1020	1009	1050	1040	1100	1070	1225
	1900	-	-	-	-	894	885	940	940	980	980	1014	1020	1047	1095
	1800	-	-	-	-	855	815	903	860	950	905	988	940	1022	970
	1700	-	-	-	-	-	-	884	815	925	850	964	880	1001	910
	1600	-	-	-	-	-	-	864	770	908	805	948	835	987	870
	1500	-	-	-	-	-	-	-	-	882	740	926	780	965	830

MODEL DEE/DEG	AIR FLOW CFM	AVAILABLE EXTERNAL STATIC PRESSURE - IWG ³													
		0.20		0.30		0.40		0.50		0.60		0.70		0.80	
		RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS	RPM	WATTS
060	2500	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	2400	1193	1665	-	-	-	-	-	-	-	-	-	-	-	-
	2300	1170	1580	1202	1620	-	-	-	-	-	-	-	-	-	-
	2200	1148	1480	1180	1530	-	-	-	-	-	-	-	-	-	-
	2100	1121	1385	1155	1425	1190	1475	-	-	-	-	-	-	-	-
	2000	1100	1285	1133	1340	1169	1385	1205	1445	-	-	-	-	-	-
	1900	1079	1180	1110	1240	1143	1280	1178	1330	1222	1375	-	-	-	-
	1800	1058	1060	1090	1135	1122	1190	1158	1240	1196	1295	-	-	-	-
	1700	1035	960	1071	1030	1103	1100	1134	1140	1164	1175	1197	1205	-	-
	1600	1020	900	1056	965	1088	1035	1118	1065	1145	1105	1170	1130	1198	1150
	1500	1004	860	1038	880	1070	925	1101	980	1130	1045	1158	1075	1184	1110

1. 230/460/575 Volts

2. For 208 Volts multiply values by 0.95.

3. Includes allowances for a wet evaporator coil, 1" filters, and the heat exchangers. Refer to Table 12 for resistance values on applications other than gas / electric units with side duct airflows.

TABLE 11: SUPPLY AIR BLOWER PERFORMANCE - DEE/DEG036-060 W/ DIRECT DRIVE¹

MODEL DEE/DEG	MOTOR SPEED	AVAILABLE EXTERNAL STATIC PRESSURE - IWG ²							
		0.20		0.30		0.40		0.50	
		CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
036	HI	-	-	-	-	1699	825	1650	785
	MED	1684	800	1631	780	1582	750	1524	720
	LOW	1487	710	1464	690	1421	670	1367	650
048	HI	1996	960	1933	936	1868	910	1795	880
	MED	1804	838	1765	810	1714	785	1650	765
	LOW	1681	760	1640	738	1604	715	1541	695
060	HI	2400	1155	2338	1125	2274	1095	2167	1045
	MED	2290	1105	2214	1065	2145	1030	2071	990
	LOW	2150	1020	2100	990	2029	950	1965	910

MODEL DEE/DEG	MOTOR SPEED	AVAILABLE EXTERNAL STATIC PRESSURE - IWG ¹									
		0.6		0.70		0.80		0.90		1.00	
		CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS	CFM	WATTS
036	HI	1570	755	1430	725	1360	700	1280	680	1180	655
	MED	1410	690	1324	650	1260	630	1185	610	1100	590
	LOW	1315	620	1246	605	1185	590	1110	570	1020	545
048	HI	1722	845	1635	820	1544	790	1419	765	1300	740
	MED	1589	735	1508	705	1407	675	1306	645	1195	625
	LOW	1490	670	1416	645	1337	620	1230	595	1120	575
060	HI	2096	1010	1990	980	1887	945	1771	905	1629	855
	MED	1990	950	1911	920	1828	885	1724	835	1604	798
	LOW	1905	880	1816	838	1724	800	1644	770	1531	710

1. Side Duct application (230/460/575 Volts)

2. Includes allowances for a wet evaporator coil, 1" filters, and the heat exchangers. Refer to Table 12 for resistance values on applications other than gas / electric units with side duct airflows.

TABLE 12: STATIC RESISTANCES

DESCRIPTION		RESISTANCE, IWG										
		CFM										
		1000	1200	1400	1600	1800	2000	2200	2400	2600	2800	3000
ECONOMIZER ^{1 2}		0.07	0.08	0.09	0.11	0.13	0.15	0.17	0.20	0.23	0.26	0.30
ELECTRIC HEATERS ¹	5 - 15 kW	0.04	0.05	0.06	0.07	0.08	0.10	0.12	0.14	0.16	0.19	0.22
	20 - 30 kW	0.06	0.07	0.08	0.09	0.11	0.13	0.15	0.17	0.20	0.23	0.26
BOTTOM DUCT CONNECTIONS ¹		0.06	0.07	0.08	0.09	0.10	0.11	0.12	0.14	0.16	0.19	0.22
COOLING ONLY ³		0.08	0.10	0.12	0.14	0.16	0.18	0.20	0.23	0.26	0.29	0.32

1. Deduct these resistance values from the available external static pressure shown on Tables 8, 9, 10, and 11.

2. The pressure through the economizer is greater for 100% outdoor air than for 100% return air. If the resistance of the return air duct system is less than 0.25 IWG, the unit will deliver less CFM during full economizer operation.

3. Add these resistance values to the available static resistance in the respective Blower Performance Table (see Tables 8, 9, 10, and 11).

TABLE 13: MOTOR AND DRIVE DATA - BELT-DRIVE BLOWER

MODEL	BLOWER RANGE RPM	MOTOR ¹				ADJUSTABLE MOTOR PULLEY		FIXED BLOWER PULLEY		BELT	
		HP	RPM	FRAME SIZE	SERVICE FACTOR	PITCH DIA. (in.)	BORE (in.)	PITCH DIA. (in.)	BORE (in.)	PITCH LENGTH (in.)	DESIGNATION
DEE / DEG 036	780 - 1120	1-1/2	1725	56	1.15	2.4-3.4	7/8	5.7	1	37.3	A36
DEE / DEG 048	790 - 1120	1-1/2	1725	56	1.15	2.4-3.4	7/8	5.7	1	37.3	A36
DEE / DEG 060	850 - 1220	1-1/2	1725	56	1.15	2.4-3.4	7/8	5.2	1	37.3	A36

1. All motors have a solid base and are inherently protected. These motors can be selected to operate into their service factor because they are located in the moving air, upstream of any heating device.

TABLE 14: BASIC UNIT W/ DIRECT-DRIVE ELECTRICAL DATA

MODEL DEE/ DEG	POWER SUPPLY	VOLTAGE LIMITATIONS ¹		COMPRESSOR		CON. FAN MOTOR, FLA	SUPPLY AIR BLOWER MOTOR, FLA	MINIMUM CIRCUIT AMPACITY	MAX. FUSE SIZE ² AMPS	MAX. HACR BREAKER SIZE, AMPS
		MIN	MAX	RLA	LRA					
036	208/230-1-60	187	253	16.7	87	2.3	4.4	27.5	40	40
	208/230-3-60	187	253	13.1	110	2.3	4.4	23.1	35	35
	460-3-60	414	504	6.7	54	1.4	2.2	12.0	15	15
	575-3-60 ³	518	630	5.1	44	1.4	2.2	10.7	15	-
048	208/230-1-60	187	253	18.7	135	2.3	5.0	38.6	60	60
	208/230-3-60	187	253	11.9	130	2.3	5.0	25.7	40	40
	460-3-60	414	504	6.3	64	1.4	2.2	13.2	20	20
	575-3-60 ³	518	630	4.9	52	1.4	2.2	11.4	15	-
060	208/230-1-60	187	253	32.1	169	2.3	6.6	49.0	80	80
	208/230-3-60	187	253	19.3	123	2.3	6.6	33.0	50	50
	460-3-60	414	504	10.0	62	1.4	3.3	17.2	25	25
	575-3-60 ³	518	630	7.9	50	1.4	3.3	14.6	20	-

1. Rated in accordance with ARI Standard 110, utilization range "A".
 2. Dual element, time delay type.
 3. DEE models only.

TABLE 15: BASIC UNIT W/ BELT-DRIVE ELECTRICAL DATA

MODEL DEE/ DEG	POWER SUPPLY	VOLTAGE LIMITATIONS ¹		COMPRESSOR		CON. FAN MOTOR, FLA	SUPPLY AIR BLOWER MOTOR, FLA	MINIMUM CIRCUIT AMPACITY	MAX. FUSE SIZE ² AMPS	MAX. HACR BREAKER SIZE, AMPS
		MIN	MAX	RLA	LRA					
036	208/230-1-60	187	253	16.7	87	2.3	7.6	30.1	45	45
	208/230-3-60	187	253	13.1	110	2.3	5.3	23.9	35	35
	460-3-60	414	504	6.7	54	1.4	2.6	12.4	20	20
	575-3-60 ³	518	630	5.1	44	1.4	2.0	9.8	15	15
048	208/230-1-60	187	253	18.7	135	2.3	8.6	42.6	60	60
	208/230-3-60	187	253	11.9	130	2.3	5.2	26.3	40	40
	460-3-60	414	504	6.3	64	1.4	2.6	14.3	20	20
	575-3-60 ³	518	630	4.9	52	1.4	2.0	11.4	15	15
060	208/230-1-60	187	253	32.1	169	2.3	8.6	51.0	80	80
	208/230-3-60	187	253	19.3	123	2.3	6.0	32.4	50	50
	460-3-60	414	504	10.0	62	1.4	3.0	16.9	25	25
	575-3-60 ³	518	630	7.9	50	1.4	2.4	13.7	20	20

1. Rated in accordance with ARI Standard 110, utilization range "A".

2. Dual element, time delay type.

3. = DEE models only.

TABLE 16: ELECTRICAL DATA COOLING/ELECTRIC HEAT W/ DIRECT DRIVE DEE036

MODEL DEE	POWER SUPPLY	HEATER ACCESSORY MODEL NUMBER	SUPPLY AIR BLOWER MOTOR FLA	ELECTRIC HEATERS			MINIMUM CIRCUIT AMPACITY	MAX FUSE SIZE ¹ AMPS	MAX. SIZE HACR ²
				kW	STAGES	TOTAL AMPS			
036	208-1-60	2CE04500506	4.4	4.0	1	19.1	30.7	45	45
		2CE04500706		5.6	1	27.1	39.4	45	45
		2CE04501006		8.0	1	38.3	53.4	60	60
		2CE04501506		11.9	2	57.4	77.3	80	80
		2CE04502006		15.9	2	76.6	101.2	110	110
	230-1-60	2CE04500506	4.4	5.3	1	22.1	33.1	45	45
		2CE04500706		7.5	1	31.3	44.6	45	45
		2CE04501006		10.6	1	44.2	60.7	70	70
		2CE04501506		15.9	2	66.0	88.3	90	90
		2CE04502006		21.2	2	88.3	115.9	125	125
	208-3-60	2CE04500525 ³	4.4	4.0	1	11.0	24.3	35	35
		2CE04500725 ³		5.6	1	15.6	25.0	35	35
		2CE04501025		8.0	1	22.1	33.1	35	35
		2CE04501525		11.9	2	33.1	46.9	50	50
		2CE04502025		15.9	2	44.2	60.7	70	70
	230-3-60	2CE04500525 ³	4.4	5.3	1	12.7	24.3	35	35
		2CE04500725 ³		7.5	1	18.0	28.1	35	35
		2CE04501025		10.6	1	25.5	37.4	40	40
		2CE04501525		15.9	2	38.2	53.3	60	60
		2CE04502025		21.2	2	51.0	69.2	70	70
	460-3-60	2CE04500746 ³	2.2	6.8	1	8.2	13.0	15	15
		2CE04501046 ³		10.1	1	12.1	17.9	20	20
		2CE04501546 ³		13.6	1	16.4	23.2	25	25
		2CE04502046 ³		19.5	2	23.5	32.1	35	35
575-3-60	2CE04501058	2.2	10.6	1	10.2	15.5	20	20	
	2CE04501558		15.9	1	15.3	21.9	25	25	
	2CE04502058		21.2	2	20.4	28.2	30	30	

1. Dual element, time delay type.
2. Standard circuit breakers may be used in Canada and on applications over 60 amps where the heaters are separately fused.
3. These electric heaters DO NOT include a fuse box. If a fuse box is required to meet a local code (e.g. Chicago), the following fuse block accessories are available for field installation (see Table 19).

TABLE 17: ELECTRICAL DATA COOLING/ELECTRIC HEAT W/ DIRECT DRIVE DEE048

MODEL DEE	POWER SUPPLY	HEATER ACCESSORY MODEL NUMBER	SUPPLY AIR BLOWER MOTOR FLA	ELECTRIC HEATERS			MINIMUM CIRCUIT AMPACITY	MAX FUSE SIZE ¹ AMPS	MAX. SIZE HACR ²
				kW	STAGES	TOTAL AMPS			
048	208-1-60	2CE04500506	5.0	4.0	1	19.1	38.6	60	60
		2CE04500706		5.6	1	27.1	39.9	60	60
		2CE04501006		8.0	1	38.3	54.3	60	60
		2CE04501506		11.9	2	57.4	77.8	80	80
		2CE04502006		15.9	2	76.6	101.8	110	110
	230-1-60	2CE04500506	5.0	5.3	1	22.1	38.6	60	60
		2CE04500706		7.5	1	31.3	45.3	60	60
		2CE04501006		10.6	1	44.2	61.5	70	70
		2CE04501506		15.9	2	66.3	89.1	90	90
	208-3-60	2CE04502006	5.0	21.2	2	88.3	116.7	125	125
		2CE04500525 ³		4.0	1	11.0	25.7	40	40
		2CE04500725 ³		5.6	1	15.6	25.7	40	40
		2CE04501025		8.0	1	22.1	34.0	40	40
		2CE04501525		11.9	2	33.1	47.5	50	50
	230-3-60	2CE04502025	5.0	15.9	2	44.2	61.4	70	70
		2CE04500525 ³		5.3	1	12.7	25.7	40	40
		2CE04500725 ³		7.5	1	18.0	28.8	40	40
		2CE04501025		10.6	1	25.5	38.0	40	40
		2CE04501525		15.9	2	38.2	54.0	60	60
	460-3-60	2CE04502025	5.0	21.2	2	51.0	70.0	70	70
		2CE04500746 ³		6.8	1	8.2	13.2	20	20
		2CE04501046 ³		10.1	1	12.1	17.9	20	20
		2CE04501546 ³		13.6	1	16.4	23.2	25	25
	575-3-60	2CE04502046 ³	2.2	19.5	2	23.5	32.1	35	35
2CE04501058		10.6		1	10.2	15.5	20	20	
2CE04501558		15.9		1	15.3	21.9	25	25	
2CE04502058		21.2		2	20.4	28.2	30	30	

1. Dual element, time delay type.

2. Standard circuit breakers may be used in Canada and on applications over 60 amps where the heaters are separately fused.

3. These electric heaters DO NOT include a fuse box. If a fuse box is required to meet a local code (e.g. Chicago), the following fuse block accessories are available for field installation (see Table 19).

TABLE 18: ELECTRIC HEAT CORRECTION FACTORS

NOMINAL VOLTAGE	VOLTAGE	KW CAP. MULTIPLIER
208	208	1.00
240	230	0.92
480	460	0.92
600	575	0.92

TABLE 19: FUSE BLOCK ACCESSORY

PART NUMBER	VOLTS
2FB04700425	208/240 Volts
2FB04700546	460 Volts

TABLE 20: ELECTRICAL DATA COOLING/ELECTRIC HEAT W/ DIRECT DRIVE DEE060

MODEL DEE	POWER SUPPLY	HEATER ACCESSORY MODEL NUMBER	SUPPLY AIR BLOWER MOTOR FLA	ELECTRIC HEATERS			MINIMUM CIRCUIT AMPACITY	MAX. FUSE SIZE ¹ AMPS	MAX. SIZE HACR ² BREAKER AMPS
				kW	STAGES	TOTAL AMPS			
060	208-1-60	2CE04500506	8.6	4.0	1	19.1	49.0	80	80
		2CE04500706		5.6	1	27.1	49.0	80	80
		2CE04501006		8.0	1	38.3	56.1	80	80
		2CE04501506		11.9	2	57.4	80.0	90	90
		2CE04502006		15.9	2	76.6	103.9	110	110
		2CE04503006		22.2	2	106.9	141.9	150	150
	230-1-60	2CE04500506	8.6	5.3	1	22.1	49.0	80	80
		2CE04500706		7.5	1	31.3	49.0	80	80
		2CE04501006		10.6	1	44.2	63.5	80	80
		2CE04501506		15.9	2	66.3	91.1	100	100
		2CE04502006		21.2	2	88.3	118.7	125	125
		2CE04503006		29.6	2	123.3	162.4	175	175
	208-3-60	2CE04500525 ³	6.0	4.0	1	11.0	33.0	50	50
		2CE04500725 ³		5.6	1	15.6	33.0	50	50
		2CE04501025		8.0	1	22.1	35.9	50	50
		2CE04501525		11.9	2	33.1	49.7	50	50
		2CE04502025		15.9	2	44.2	63.5	70	70
		2CE04503025		22.2	2	61.7	85.4	90	90
	230-3-60	2CE04500525 ³	6.0	5.3	1	12.7	33.0	50	50
		2CE04500725 ³		7.5	1	18.0	33.0	50	50
		2CE04501025		10.6	1	25.5	40.1	50	50
		2CE04501525		15.9	2	38.2	56.1	60	60
		2CE04502025		21.2	2	51.0	72.0	80	80
		2CE04503025		29.6	2	71.2	97.3	100	100
	460-3-60	2CE04500746 ³	3.0	6.8	1	8.2	17.2	25	25
		2CE04501046 ³		10.1	1	12.1	19.3	25	25
		2CE04501546 ³		13.6	1	16.4	24.6	25	25
		2CE04502046 ³		19.5	2	23.5	33.4	35	35
		2CE04503046 ³		28.8	2	34.6	47.4	50	50
	575-3-60	2CE04501058	2.4	10.6	1	10.2	16.9	20	20
2CE04501558		15.9		1	15.3	23.2	25	25	
2CE04502058		21.2		2	20.4	29.6	30	30	
2CE04503058		30.4		2	29.3	40.7	45	45	

1. Dual element, time delay type.
2. Standard circuit breakers may be used in Canada and on applications over 60 amps where the heaters are separately fused.
3. These electric heaters DO NOT include a fuse box. If a fuse box is required to meet a local code (e.g. Chicago), the following fuse block accessories are available for field installation (see Table 19).

TABLE 21: ELECTRICAL DATA COOLING/ELECTRIC HEAT W/ BELT DRIVE DEE036 & 048

MODEL DEE	POWER SUPPLY	HEATER ACCESSORY MODEL NUMBER	SUPPLY AIR BLOWER MOTOR FLA	ELECTRIC HEATERS			MINIMUM CIRCUIT AMPACITY	MAX. FUSE SIZE ¹ AMPS	MAX. SIZE HACR ² BREAKER AMPS		
				KW	STAGES	TOTAL AMPS					
036	208-1-60	2CE04500506	5.3	4.0	1	19.1	34.9	50	50		
		2CE04500706		5.6	1	27.1	44.6	50	50		
		2CE04501006		8.0	1	38.3	58.6	60	60		
		2CE04501506		11.9	2	57.4	82.5	90	90		
		2CE04502006		15.9	2	76.6	106.4	110	110		
	230-1-60	2CE04500506	5.3	5.3	1	22.1	38.4	50	50		
		2CE04500706		7.5	1	31.2	49.8	50	50		
		2CE04501006		10.6	1	44.2	66.0	70	70		
		2CE04501506		15.9	2	66.3	93.6	100	100		
	208-3-60	2CE04502006	5.3	21.2	2	88.3	121.2	125	125		
		2CE04500525 ³		4.0	1	11.0	25.2	35	35		
		2CE04500725 ³		5.6	1	15.6	26.2	35	35		
		2CE04501025		8.0	1	22.1	34.2	35	35		
		2CE04501525		11.9	2	33.1	48.1	50	50		
	230-3-60	2CE04502025	5.3	15.9	2	44.2	61.9	70	70		
		2CE04500525 ³		5.3	1	12.7	25.2	35	35		
		2CE04500725 ³		7.5	1	18.0	29.2	35	35		
		2CE04501025		10.6	1	25.5	38.5	40	40		
		2CE04501525		15.9	2	38.2	54.4	60	60		
	460-3-60	2CE04502025	3.1	21.2	2	51.0	70.4	80	80		
		2CE04500746 ³		6.8	1	8.2	14.1	20	20		
		2CE04501046 ³		10.1	1	12.1	19.1	20	20		
		2CE04501546 ³		13.6	1	16.4	24.3	25	25		
	575-3-60	2CE04502046 ³	3.1	19.5	2	23.5	33.2	35	35		
		2CE04501058		10.6	1	10.2	16.6	20	20		
		2CE04501558		15.9	1	15.3	23.0	25	25		
	048	208-1-60	2CE04502058	8.6	21.2	2	20.4	29.4	30	30	
			2CE04500506		4.0	1	19.1	42.2	60	60	
2CE04500706			5.6		1	27.1	44.4	60	60		
2CE04501006			8.0		1	38.3	58.8	60	60		
2CE04501506			11.9		2	57.4	82.3	90	90		
230-1-60		2CE04502006	8.6	15.9	2	76.6	106.3	110	110		
		2CE04500506		5.3	1	22.1	42.2	60	60		
		2CE04500706		7.5	1	31.2	49.8	60	60		
		2CE04501006		10.6	1	44.2	66.0	70	70		
208-3-60		2CE04501506	5.2	15.9	2	66.3	93.6	100	100		
		2CE04502006		21.2	2	88.3	121.2	125	125		
		2CE04500525 ³		4.0	1	11.0	25.9	40	40		
		2CE04500725 ³		5.6	1	15.6	25.9	40	40		
		2CE04501025		8.0	1	22.1	34.3	40	40		
230-3-60		2CE04501525	5.2	11.9	2	33.1	47.8	50	50		
		2CE04502025		15.9	2	44.2	61.7	70	70		
		2CE04500525 ³		5.3	1	12.7	25.9	40	40		
		2CE04500725 ³		7.5	1	18.0	29.1	40	40		
		2CE04501025		10.6	1	25.5	38.4	40	40		
460-3-60		2CE04501525	2.6	15.9	2	38.2	54.3	60	60		
		2CE04502025		21.2	2	51.0	70.2	80	80		
		2CE04500746 ³		6.8	1	8.2	13.6	20	20		
		2CE04501046 ³		10.1	1	12.1	18.4	20	20		
575-3-60		2CE04501546 ³	2.0	13.6	1	16.4	23.7	25	25		
		2CE04502046 ³		19.5	2	23.5	32.6	35	35		
		2CE04501058		10.6	1	10.2	15.2	20	20		
					2CE04501558	15.9	1	15.3	21.6	25	25
					2CE04502058	21.2	2	20.4	28.0	30	30

1. Dual element, time delay type.
2. Standard circuit breakers may be used in Canada and on applications over 60 amps where the heaters are separately fused.
3. These electric heaters DO NOT include a fuse box. If a fuse box is required to meet a local code (e.g. Chicago) see Table 19 for fuse block accessories available for field installation.

TABLE 22: ELECTRICAL DATA COOLING/ELECTRIC HEAT W/ BELT DRIVE DEE060

MODEL DEE	POWER SUPPLY	HEATER ACCESSORY MODEL NUMBER	SUPPLY AIR BLOWER MOTOR FLA	ELECTRIC HEATERS			MINIMUM CIRCUIT AMPACITY	MAX. FUSE SIZE ¹ AMPS	MAX. SIZE HACR ² BREAKER AMPS
				kW	STAGES	TOTAL AMPS			
060	208-1-60	2CE04500525 ³	8.6	4.0	1	19.1	51.0	80	80
		2CE04500725 ³		5.6	1	27.1	51.0	80	80
		2CE04501025		8.0	1	38.3	58.6	80	80
		2CE04501525		11.9	2	57.4	82.5	90	90
		2CE04502025		15.9	2	76.6	106.4	110	110
		2CE04503025		22.2	2	106.9	144.4	150	150
	230-1-60	2CE04500525 ³	8.6	5.3	1	22.1	51.0	80	80
		2CE04500725 ³		7.5	1	31.3	51.0	80	80
		2CE04501025		10.6	1	44.2	66.0	80	80
		2CE04501525		15.9	2	66.3	93.6	100	100
		2CE04502025		21.2	2	88.3	121.1	125	125
		2CE04503025		29.6	2	123.3	164.9	175	175
	208-3-60	2CE04500525 ³	6.0	4.0	1	11.0	32.4	50	50
		2CE04500725 ³		5.6	1	15.6	32.4	50	50
		2CE04501025		8.0	1	22.1	35.1	50	50
		2CE04501525		11.9	2	33.1	48.9	50	50
		2CE04502025		15.9	2	44.2	62.7	70	70
		2CE04503025		22.2	2	61.7	84.6	90	90
	230-3-60	2CE04500525 ³	6.0	5.3	1	12.7	32.4	50	50
		2CE04500725 ³		7.5	1	18.0	32.4	50	50
		2CE04501025		10.6	1	25.5	39.4	50	50
		2CE04501525		15.9	2	38.2	55.3	60	60
		2CE04502025		21.2	2	51.0	71.2	80	80
		2CE04503025		29.6	2	71.2	96.5	100	100
	460-3-60	2CE04500746 ³	3.0	6.8	1	8.2	16.4	25	25
		2CE04501046 ³		10.1	1	12.1	18.9	25	25
		2CE04501546 ³		13.6	1	16.4	24.2	25	25
		2CE04502046 ³		19.5	2	23.5	33.1	35	35
		2CE04503046 ³		28.8	2	34.6	47.1	50	50
	575-3-60	2CE04501058	2.4	10.6	1	10.2	15.7	20	20
2CE04501558		15.9		1	15.3	22.1	25	25	
2CE04502058		21.2		2	20.4	28.5	30	30	
2CE04503058		30.4		2	29.3	39.6	40	40	

1. Dual element, time delay type.
2. Standard circuit breakers may be used in Canada and on applications over 60 amps where the heaters are separately fused.
3. These electric heaters DO NOT include a fuse box. If a fuse box is required to meet a local code (e.g. Chicago) see Table 19 for fuse block accessories available for field installation.

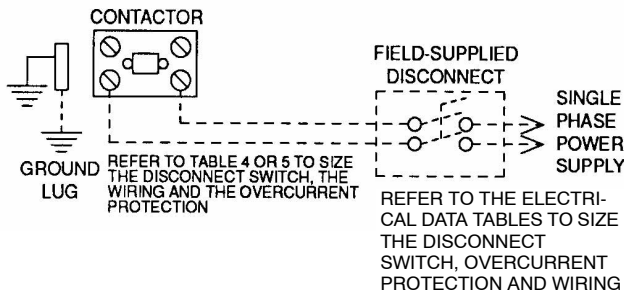
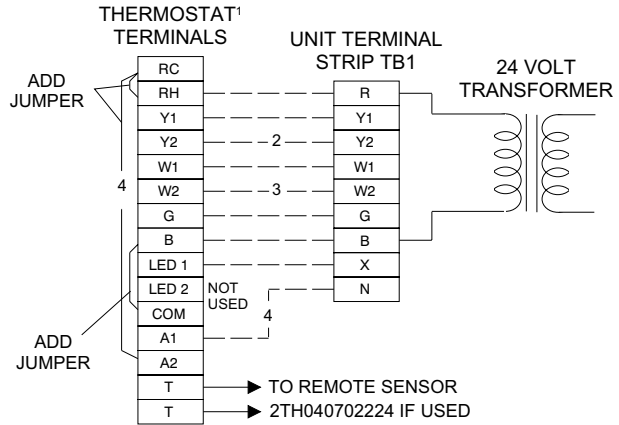


FIGURE 2 - POWER SUPPLY, POWER WIRING SINGLE PHASE



- ¹ ELECTRONIC PROGRAMMABLE THERMOSTAT 2ET04700224 (INCLUDES SUBBASE)
- ² SECOND STAGE COOLING IS NOT REQUIRED ON UNITS LESS ECONOMIZER.
- ³ SECOND STAGE HEATING IS ONLY REQUIRED ON UNITS WITH A TWO STAGE ELECTRIC HEATER.
- ⁴ REMOVE JUMPER J2 FROM TERMINALS 4 AND 9 ON JUMPER PLUG CONNECTOR P6 ON UNITS WITH ECONOMIZER. TERMINALS A1 AND A2 PROVIDE A RELAY OUTPUT TO CLOSE THE OUTDOOR ECONOMIZER DAMPERS WHEN THE THERMOSTAT SWITCHES TO THE SET-BACK POSITION.

FIGURE 5 - CONTROL WIRING-COOLING & HEATING MULTI-STAGE

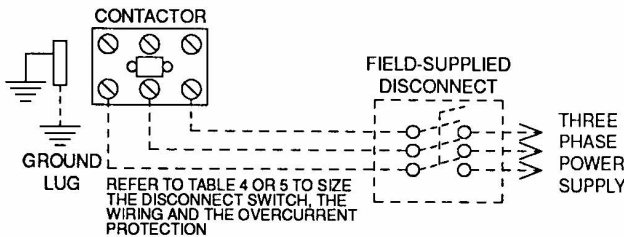
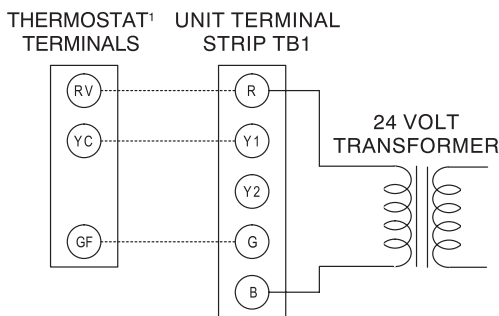


FIGURE 3 - POWER SUPPLY, POWER WIRING THREE PHASE

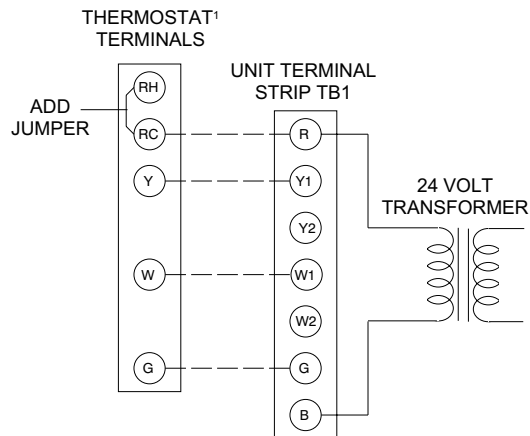
COOLING/HEATING (24 VOLT THERMOSTAT)

COOLING ONLY (24 VOLT THERMOSTAT)



¹24 VOLT THERMOSTAT 2TH07701024 IF THE UNIT HAS AN ECONOMIZER, REMOVE JUMPER J1 FROM TERMINALS 8 AND 10 ON THE RELAY BOARD TO PREVENT SIMULTANEOUS OPERATION OF THE COMPRESSOR AND THE ECONOMIZER. IF YOU WANT TO CONTROL THE ECONOMIZER ON A SECOND STAGE OF COOLING, USE THE THERMOSTAT 2TH04701224.

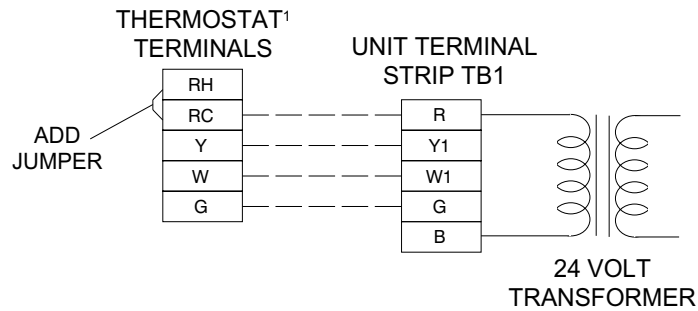
FIGURE 4 - CONTROL WIRING - COOLING ONLY



¹24 VOLT THERMOSTAT 2TH07701024. IF THE UNIT HAS AN ECONOMIZER, REMOVE JUMPER J1 FROM TERMINALS 8 AND 10 ON THE RELAY BOARD TO PREVENT SIMULTANEOUS OPERATION OF THE COMPRESSOR AND THE ECONOMIZER. IF YOU WANT TO CONTROL THE ECONOMIZER ON A SECOND STAGE OF COOLING OR HAVE AND ELECTRIC HEAT ACCESSORY WITH TWO STAGES OF HEAT, USE THERMOSTAT 2TH0471024

FIGURE 6 - CONTROL WIRING - COOLING/ HEATING (24 VOLT THERMOSTAT)

COOLING / HEATING (ELECTRONIC THERMOSTAT)
SINGLE STAGE



¹ELECTRONIC PROGRAMMABLE THERMOSTAT 2ET07701024 (INCLUDES SUBBASE).
IF THIS UNIT HAS AN ECONOMIZER, REMOVE JUMPER J1 FROM TERMINALS 8 AND
10 ON THE RELAY BOARD TO PREVENT SIMULTANEOUS OPERATION OF THE
COMPRESSOR AND THE ECONOMIZER. IF YOU WANT TO CONTROL THE
ECONOMIZER ON A SECOND STAGE OF COOLING, USE THERMOSTAT 2ET04700224.

FIGURE 7 - CONTROL WIRING - COOLING/HEATING (ELECTRONIC THERMOSTAT)

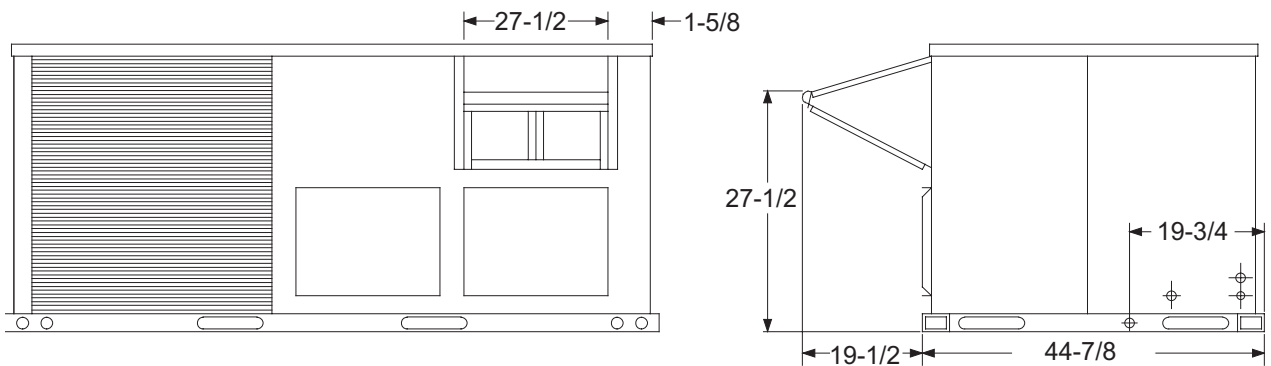
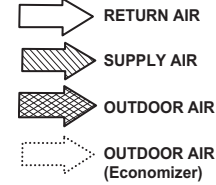
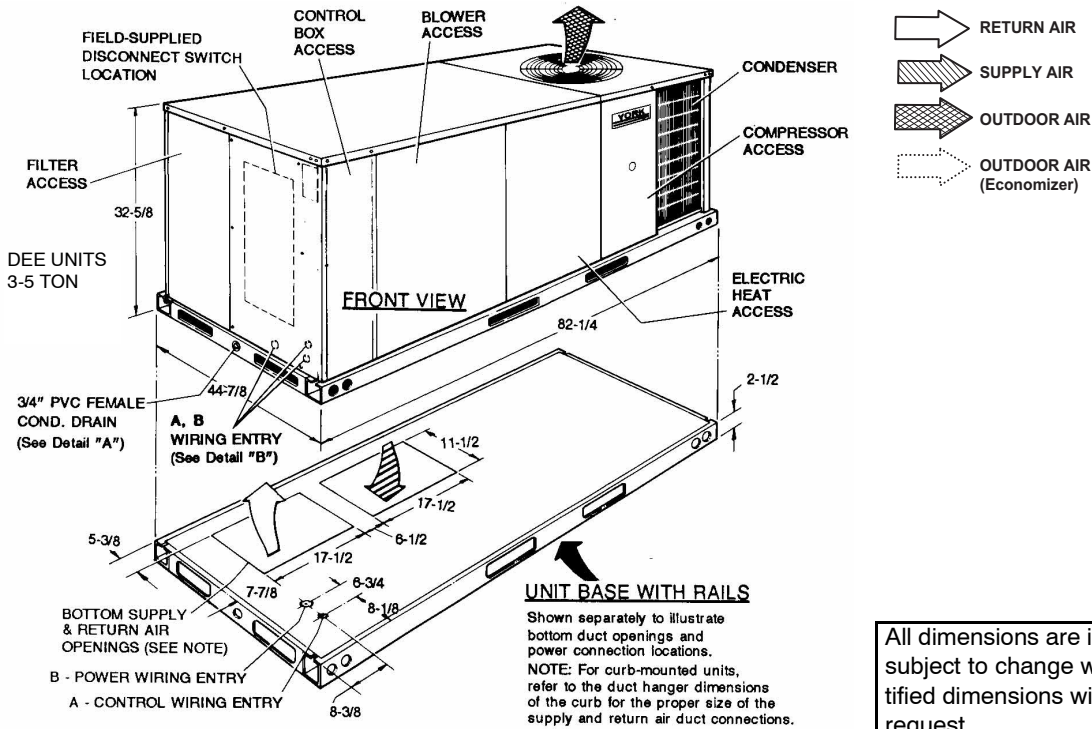


FIGURE 8 - UNIT DIMENSIONS WITH ECONOMIZER RAINHOOD



All dimensions are in inches. They are subject to change without notice. Certified dimensions will be provided upon request.

FIGURE 9 - UNIT DIMENSIONS DEE 3, 4, & 5 TON

TABLE 23: UTILITIES ENTRY DATA

HOLE	KNOCKOUT SIZE (DIA.)	USED FOR
A	7/8" ¹	Control Wiring (Side or Bottom) ²
B	2"	Power Wiring (Side or Bottom)
C	1-5/8"	Gas Piping (Front)
D	1-1/2"	Gas Piping (Bottom)

- Knockouts in the bottom of the unit can be located by the slice in the insulation.
- DO NOT remove the 2" knockout ring.

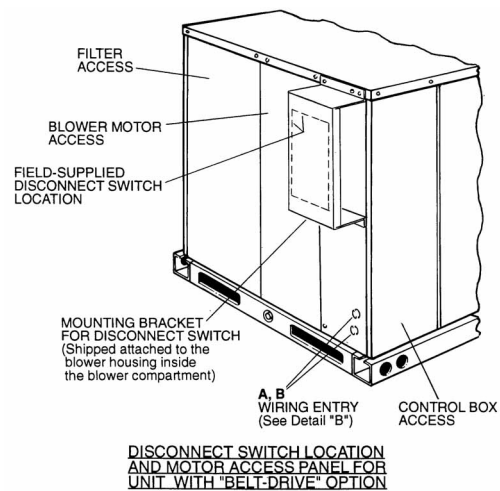


FIGURE 10 -ACCESS PANELS AND DISCONNECT

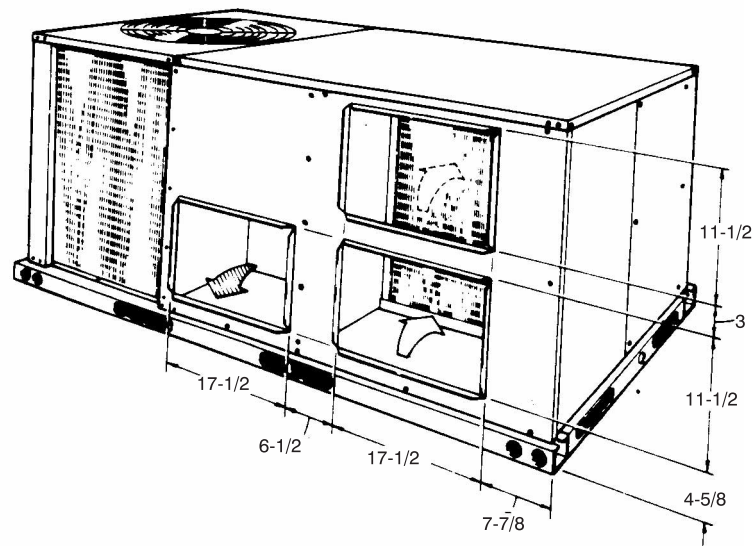


FIGURE 12 -DEE/DEG DIMENSIONS REAR VIEW - 3, 4, & 5 TON

Duct covers - units are shipped with all air duct openings covered.

For side duct applications:

- Remove and discard the supply and return air duct covers.
- Connect ductwork to duct flanges on the rear of the unit.

For bottom duct applications:

- Remove the side supply air duct cover to gain access to the bottom supply air knockout panel.
- Remove and discard the bottom knockout panel.
- Replace the side duct cover.
- With filter section access panel removed from the unit, remove and discard the bottom return air knockout panel.
- Replace the filter Access panel.

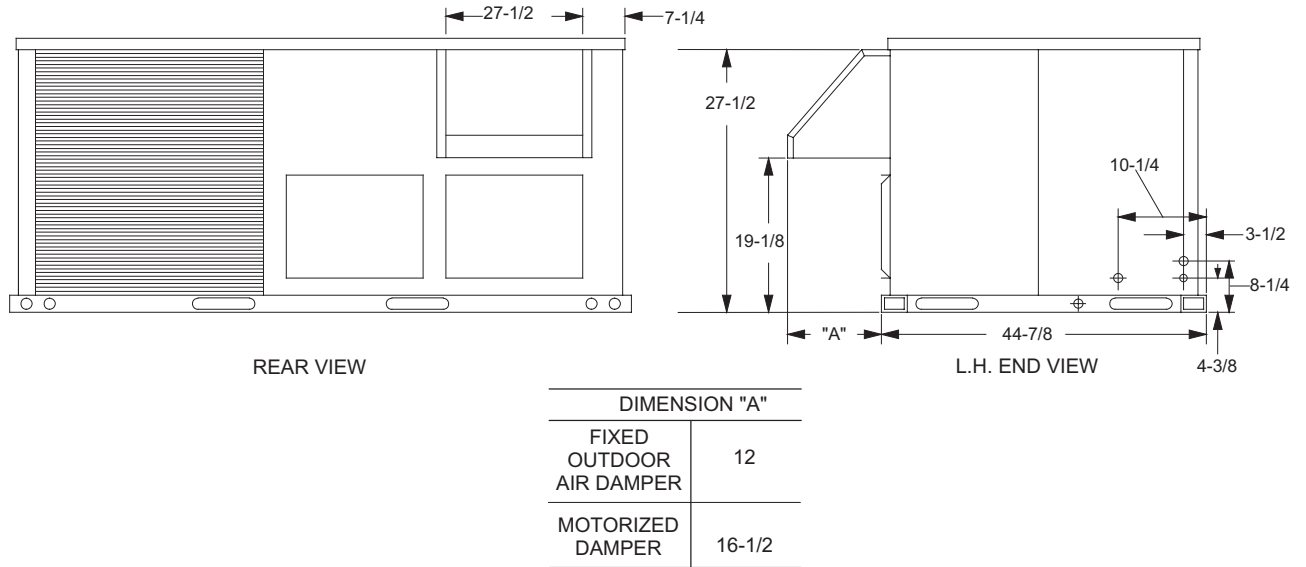


FIGURE 13 -DETAIL B UNIT DIMENSIONS WITH DAMPER/RAINHOOD

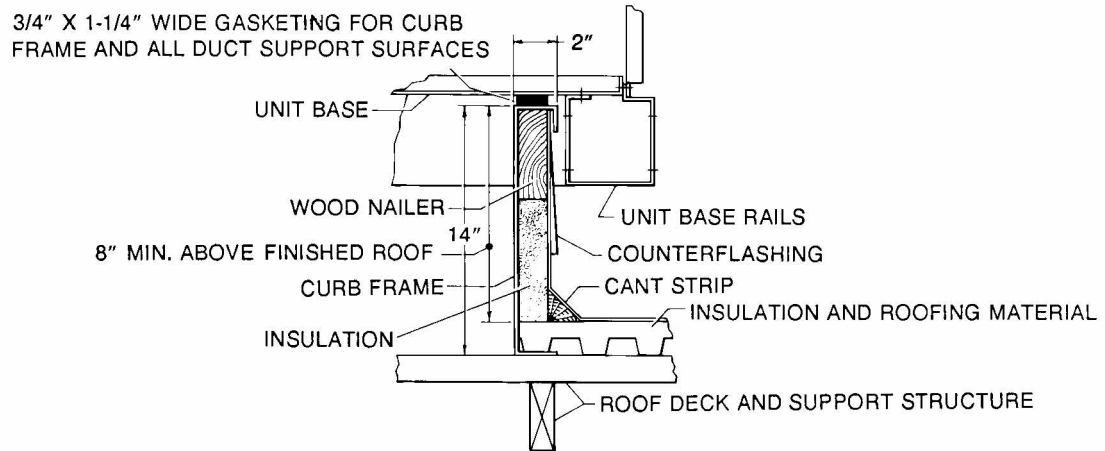


FIGURE 14 -UNIT & CURB APPLICATION

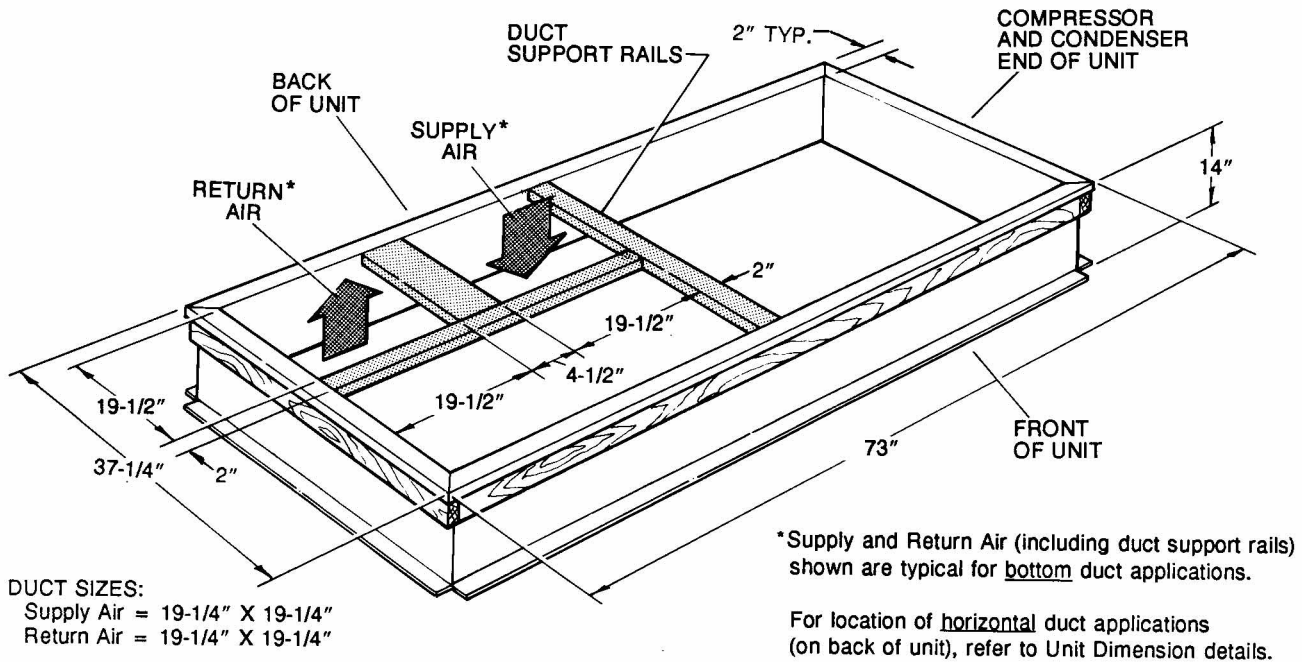


FIGURE 15 -ROOF CURB DIMENSIONS DEE & DEG 3, 4, & 5 TON

TABLE 25: UNIT WEIGHTS

UNIT	UNIT WEIGHT (lbs.)	CORNER WEIGHTS (location, lbs.)			
		"A"	"B"	"C"	"D"
DEG036	665	188	185	145	147
DEG048	705	199	196	154	156
DEG060	730	206	203	159	162
DEE036	565	160	157	123	125
DEG048	615	173	170	135	137
DEG060	640	180	177	140	143

TABLE 26: ACCESSORY'S WEIGHT

DESCRIPTION		WEIGHT
ECONOMIZER		50
MOTORIZED OUTDOOR AIR DAMPER		26
ELECTRIC HEAT (nom. kW DEE only)	5-7 kW	18
	10 - 15 kW	23
	10 - 30 kW	28
ROOF MOUNTING CURB		92
RELIEF/FIXED AIR DAMPER		10
BELT-DRIVE BLOWER		5

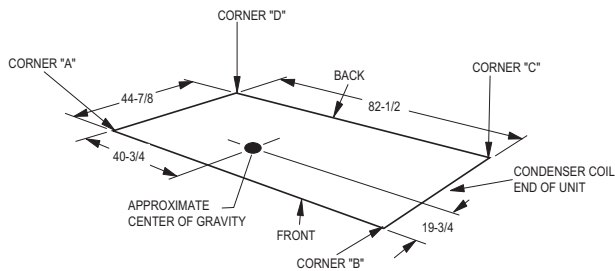


FIGURE 16 -CENTER OF GRAVITY

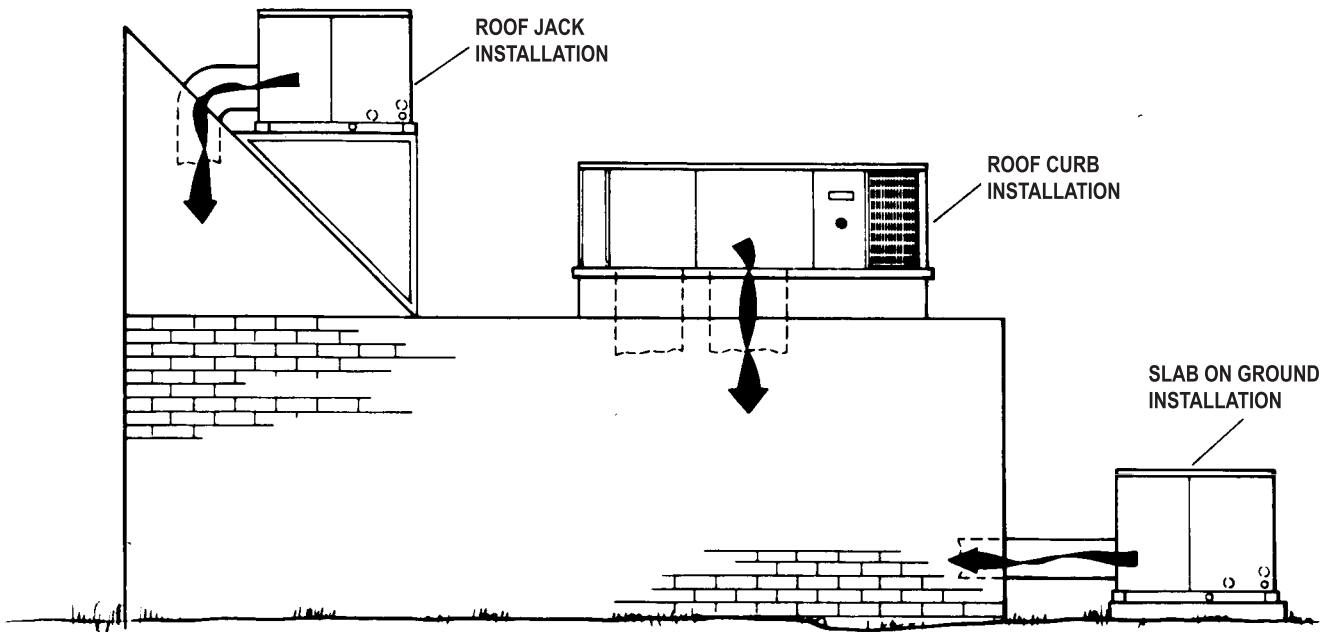


FIGURE 17 -TYPICAL APPLICATIONS

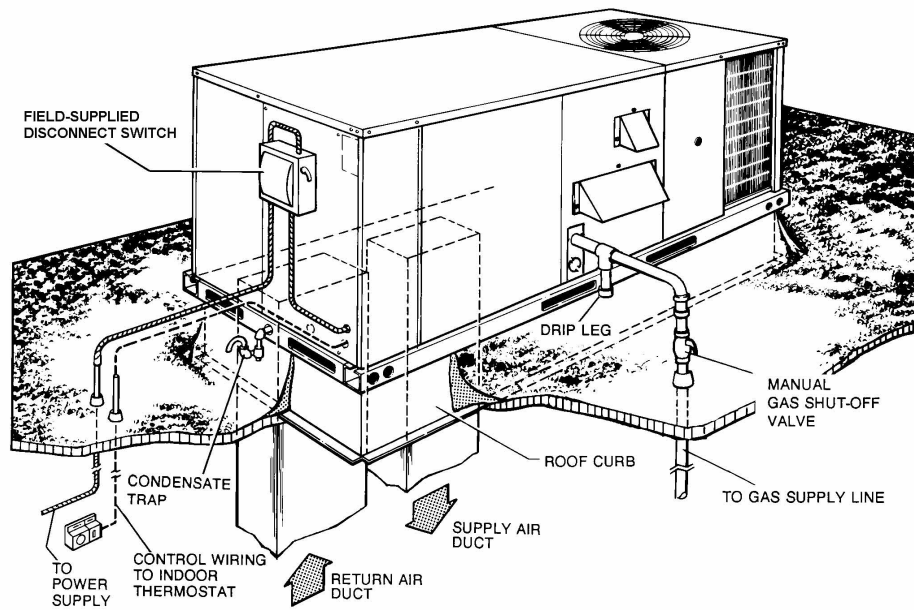


FIGURE 18 -TYPICAL ROOF TOP INSTALLATION

MECHANICAL SPECIFICATIONS

GENERAL DESCRIPTION

Units shall be High Efficiency factory-assembled, single packaged, (DUS Electric Cooling/Gas Heat, DHC Electric Cooling/Optional Electric Heat), designed for outdoor mounted installation. Units shall have minimum SEER ratings of 11.0. They shall have built in field convertible duct connections for down discharge supply/return or horizontal discharge supply/return, and be available with factory installed options or field installed accessories.

The units shall be factory wired, piped, charged with R-22 refrigerant and factory tested prior to shipment. All unit wiring shall be both numbered and color coded. Enclosed in each unit shall be a factory test log sheet consisting of the unit tested pressures, temperatures and amps, as tested prior to shipment.

All units shall be manufactured in a facility certified to ISO 9001 standards, and the cooling performance shall be rated in accordance with DOE and ARI test procedures. Units shall be UL listed and classified to ANSIZ21.47 standards and UL 1995/CAN/CSA No. 236-M90 conditions.

UNIT CABINET

1. Unit cabinet shall be constructed of G90 galvanized steel, with exterior surfaces coated with a non-chalking, powered paint finish, certified at 750 hours salt spray test per ASTM-B117 standards.
2. Indoor blower section shall be insulated with up to 1" thick insulation, coated on the air side. Aluminum foil faced insulation shall be used in the furnace compartment and be fastened with ridged fasteners to prevent insulation from entering the air stream.
3. Cabinet panels shall be large size, easily removable for servicing and maintenance.
4. Full perimeter base rails shall be provided to assure reliable transit of equipment, overhead rigging, fork truck access and proper sealing on roof curb applications.
5. Disposable 1" filters shall be furnished and be accessible through a removable access door, sealed air tight. Units filter track shall be designed to accommodate either 1 or 2" filters.
6. Fan performance measuring ports shall be provided on the outside of the cabinet to allow accurate air measurements of evaporator fan performance without removing panels or creating air by-pass of the coils.
7. Units vertical discharge and return duct configuration shall be designed to fit between standard 24" O.C. beams without modification to building structure, duct work and base unit.
8. Condensate pan shall be internally sloped and conform to ASHARE 62-89 self-draining standards. Condensate connection shall be a minimum of 3/4" I.D. female and be a ridged mount connection.

INDOOR (EVAPORATOR) FAN ASSEMBLY

1. Fan shall be direct drive, multi-speed, or a factory installed belt drive, adjustable-pitch motor pulley option. Job site selected (B.H.P.) brake horse power shall not exceed the motors nameplate horse power rating, plus the service factor. Units shall be designed not to operate above service factor.
2. Fan wheel shall be double-inlet type with forward-curved blades, dynamically balanced to operate smoothly throughout the entire range of operation. Airflow design shall be constant air volume.
3. Bearings shall be sealed and permanently lubricated for longer life and no maintenance.

OUTDOOR (CONDENSER) FAN ASSEMBLY

1. The outdoor fan shall be of the direct-driven propeller type, discharge air vertically, have aluminum blades riveted to corrosion resistant steel spider bracket and shall be dynamically balanced for smooth operation.
2. The outdoor fan motor shall be totally enclosed with permanently lubricated bearings and internally protected against overload conditions.

REFRIGERANT COMPONENTS

1. Compressors:
 - a. Shall be fully hermetic type, direct drive, internally protected with internal high-pressure relief and over temperature protection. The hermetic motor shall be suction gas cooled and have a voltage range of + or - 10% of the unit nameplate voltage.
 - b. Shall have internal spring isolation and sound muffling to minimize vibration and noise, and be externally isolated on a dedicated, independent mounting.
2. Coils:
 - a. Evaporator and condenser coils shall have aluminum plate fins mechanically bonded to seamless internally-enhanced copper tubes with all joints brazed. Special Phenolic coating shall be available as a factory option.
 - b. Evaporator and Condenser coils shall be of the direct expansion, draw-through design.
3. Refrigerant Circuit and Refrigerant Safety Components shall include:

- a. Balance-port thermostatic expansion valve with independent circuit feed system.
 - b. Filter drier/strainer to eliminate any moisture or foreign matter.
 - c. Accessible service gage connections on both suction and discharge lines to charge, evacuate, and measure refrigerant pressure during any necessary servicing or troubleshooting, without losing charge.
 - d. The refrigeration system shall provide at least 15 °F of liquid sub-cooling at design conditions.
4. Unit Controls:
- a. Unit shall be complete with self contained low-voltage control circuit protected by a resettable circuit breaker fuse on the 24 volt transformer side.
 - b. Unit shall incorporate a lock-out circuit which provides reset capability at the space thermostat or base unit, should any of the following standard safety devices trip and shut off compressor:
 - I. Loss-of-charge/Low-pressure switch.
 - II. High-pressure switch.
 - III. Freeze-protection thermostat, evaporator coil.

If any of the above safety devices trip, an LED (light-emitting diode) indicator shall illuminate.

- c. Unit shall incorporate AUTO RESET compressor over temperature, over current protection.
- d. Unit shall operate with conventional thermostat designs and have a low voltage terminal strip for easy hook-up.

GAS HEATING SECTION (DEG MODELS)

1. Shall be designed with induced draft combustion with post purge logic, energy saving direct spark ignition and redundant main gas valve. Ventor wheel shall be constructed of stainless steel for corrosion resistance.
2. The heat exchanger shall be of the tubular type, constructed of T1-40 aluminized steel for corrosion resistance and allowing minimum mixed air entering temperature of 25 °F.
3. Burners shall be of the in-shot type, constructed of aluminum coated steel and contain air mixture adjustments.
4. All gas piping shall enter the unit cabinet at a single location, through either the side or bottom, without any field modifications.
5. An integrated control board shall provide timed control of evaporator fan functioning and burner ignition.

6. Heating section shall be provided with the following minimum protection:
 - a. Primary and auxiliary high-temperature limit switches.
 - b. Induced draft motor speed sensor.
 - c. Flame roll out switch (automatic reset).
 - d. Flame proving controls.

ELECTRIC HEATING SECTION (DEE MODELS)

1. An electric heating section, with nickel chromium elements, shall be provided in a range of 5 through 30 KW, offering two stages of capacity - 16 KW and above on 208/230 volt heaters and 20 KW and above on 460 and 575 volt heaters.
2. The heating section shall have a primary limit control(s) and automatic reset, to prevent the heating element system from operating at an excessive temperature.
3. The Heating Section assembly shall slide out of the unit for easy maintenance and service.
4. Units with Electric Heating Sections shall be wired for a single point power supply with branch circuit fusing (where required).

UNIT OPERATING CHARACTERISTICS

1. Unit shall be capable of starting and running at 125 °F outdoor temperature, exceeding maximum load criteria of ARI Standard 210/240.
2. The compressor, with standard controls, shall be capable of operation down to 45 °F outdoor temperature. Accessory low ambient kit shall be available for operation down to 0 °F.
3. Unit shall be provided with fan time delay to prevent cold air delivery before heat exchanger warms up. (Gas heat only.)

ELECTRICAL REQUIREMENTS

All unit power wiring shall enter unit cabinet at a single factory provided location and be capable of side or bottom entry, to minimize roof penetrations and avoid unit field modifications. Separate side and bottom openings shall be provided for the control wiring.

STANDARD LIMITED WARRANTIES

- Compressor- 5 Years
- Heat Exchanger- 10 Years
- Elect. Heat. Elem.- 5 Years
- Parts - 1 Year

OPTIONAL OUTDOOR AIR

(Shall be made available by either/or):

1. **ELECTRONIC ENTHALPY AUTOMATIC ECONOMIZER** - Outdoor and return air dampers that are interlocked and positioned by a fully-modulating, spring-return damper actuator. The maximum leakage rate for the outdoor air intake dampers shall not exceed 2% when dampers are fully closed and operating against a pressure differential of 0.5 IWG. A unit-mounted potentiometer shall be provided to adjust the outdoor and return air damper assembly to take in CFM of outdoor air to meet the minimum ventilation requirement of the conditioned space during normal operation. During economizer operation, a mixed-air temperature control shall modulate the outdoor and return air damper assembly to prevent the supply air temperature from dropping below 55 °F. Changeover from compressor to economizer operation shall be provided by an integral electronic enthalpy control that feeds input into the basic module. The outdoor intake opening shall be covered with a rain hood that matches the exterior of the unit. Water eliminator/filters shall be provided. Simultaneous economizer/compressor operation is also possible. Dampers shall fully close on power loss.
2. **DUAL INPUT DIFFERENTIAL ELECTRONIC ENTHALPY AUTOMATIC ECONOMIZER** - Outdoor and return air dampers that are interlocked and positioned by a fully-modulating, spring-return damper actuator. The maximum leakage rate for the outdoor air intake dampers shall not exceed 2% when dampers are fully closed and operating against a pressure differential of 0.5 IWG. A unit mounted potentiometer shall be provided to adjust the outdoor and return air damper assembly to take in the design CFM of outdoor air to meet the minimum ventilation requirement of the conditioned space during normal operation. During economizer operation, a mixed-air temperature control shall modulate the outdoor and return air damper assembly to prevent the supply air temperature from dropping below 55 °F. Changeover from compressor to economizer operation shall be provided by two integral electronic enthalpy controls - one that senses outdoor air and one that senses indoor air. Both enthalpy sensors supply input to the logic module which modulates both sets of dampers for maximum economizer savings. The outdoor intake opening shall be covered with a rain hood that matches the exterior of the unit. Water eliminator/filters shall be provided. Simultaneous economizer/compressor operation is also possible. Dampers shall fully close on power loss.

OTHER PRE-ENGINEERED ACCESSORIES AVAILABLE

1. **ROOF CURB** - 14" AND 8" high, full perimeter knock-down curb with hinged design for quick assembly.
2. **MANUAL OUTDOOR DAMPER** - Provides 0% through 35% or 0% through 100% outdoor air capability (field adjustable). Designed for duct mounted side supply/return applications. Includes a hood and a screen assembly.
3. **OUTDOOR COIL GUARD** - Prevents coil damage.
4. **BAROMETRIC RELIEF DAMPER** - Contains a rain hood, air inlet screen, exhaust damper and mounting hardware. Used to relieve internal air pressure through the unit during economizer operation.
5. **PROPANE CONVERSION KIT** - Contains new orifices and gas valve regulator to convert from natural to L.P. gas.
6. **LOW NOX** - Required to reduce the emission of nitrogen oxides below 40 nano grams per joule.
7. **HIGH ALTITUDE - NATURAL GAS** - Required for applications between 2000 and 6000 feet altitude.
8. **HIGH ALTITUDE - PROPANE GAS** - Required for applications between 2000 and 6000 feet altitude. Must be used with propane conversion kit.
9. **GAS PIPING** - Contains pipe nipples, fittings and gas cock (including panel assess gaskets) required for bottom gas supply connection with external shut-off.
10. **BURGLAR BARS** - Designed to work with above roofcurbs. Fits duct openings of curb supply and return air openings.
11. **THERMOSTATS** - Multiple models available from A.C.O., M.C.O., Electronic or Electrical Mechanical versions.
12. **ANTI-RECYCLE TIMER** - Assures 5-minute off-time between compressor cycles.
13. **LOW AMBIENT KIT** - Provides unit cooling operation down to 0 °F.
14. **ELECTRIC HEAT** - Slide-in design, provides single point power and ranges from 5 to 30 KW.

OTHER FACTORY INSTALLED OPTIONS

1. **HIGH PERFORMANCE BELT DRIVE MOTOR**
2. **TECHNICOAT PHENOLIC COATED COND. COIL**
3. **ELECTRONIC ENTHALPY ECONOMIZER**
4. **DUAL INPUT ELECTRONIC ENTHALPY ECONOMIZER**