

**Addendum
No. 1**

Date: December 22nd, 2015

Project: DFS Wilmington – Rooftop HVAC Replacement

Project No: SJ 14073 / MC1002000249

The work herein shall be considered part of the bid documents for the referenced project and carried out in accordance with the following supplemental instructions issued in accordance with the Contract Documents without change in Contract Sum or Contract Time. Acknowledge receipt of addendum on the bid form as indicated.

Pre-Bid Meeting Minutes:

1. Introduction of team members.
2. Reviewed bidding requirements, including location of bid and time due.
3. Reviewed requirements for submitting questions during the bid process.
All questions must be submitted in writing to Brian Zigmond at Studio JAED: zigmondb@studiojaed.com
 - a. **Final questions must be submitted by Tuesday, 12/29/15 at 4:00 PM.**
4. Project manager from OMB/DFM is Dean Seely - (302) 739-5644. If additional access is needed to review the site prior to bid, it must be coordinated through Dean.
5. Reviewed project scope, drawings, and project location.
6. Coordination of the construction with the Owner and users is paramount for this project. The scope of work includes a significant amount of work in the second-floor laboratories, which includes DNA and toxicology research. All work in these areas must be scheduled well in advance with the Owner.
 - a. Contractor shall provide a proposed schedule at the onset of the project, and will provide three-week "look-ahead" schedules updated throughout the project.
 - b. Regular business hours for the site are 7:00 AM until 5:00 PM.
 - c. The crane pick for the RTU replacements will need to be conducted on a weekend.
7. Total project time allocated is 150 calendar days from the receipt of the P.O. from the State of Delaware.
8. Federal-approved background checks will be required for all on-site personnel for this project, including all subcontractors.
 - a. DNA swabs will be taken of all personnel that will be working in the DNA sequencing lab.
9. Physical review of the new MDP took place, along with a review of the RTUs.

Clarification:

1. During the course of the construction, the rear alley behind the facility must be accessible from one end or the other at ALL TIMES to facilitate uninhibited access to the autopsy suite.
2. Drawing E9.1 – Single Line Diagram: The manufacturer / model of the recently installed MDP is Square D, I-Line SPD.

Changes to Drawings:

1. NONE.

Changes to Project Manual:

1. Please see attached revised BID FORM correcting the numbering of the allowances.

General Information:

Pre-Bid Sign-in Sheet: Please see attached sheet for a list of the attendees at the mandatory pre-bid.

Existing Unit Information: Cut sheets for the original units have been provided for reference. NOTE: This information was pulled from archival documents and may not be 100% accurate. It is incumbent upon the contractor to set up a meeting time to visit the site and verify any critical data from these sheets as they may deem necessary.

END

Sign-In Sheet

Owner:	State of Delaware	Date:	December 21, 2015
Project:	14073 DFS Rooftop HVAC Replacement	Subject:	Pre-Bid

Name	Company/Address	Phone	E-Mail
Wayne D. Comegys	Delcollo Electric 226 Brookside Drive Wilmington, DE 19804	302-994-3400 Ext. 105	wayne@delcollo.com
Jim Orga	First State Electric Company 25 King Court New castle, DE 19720	302-322-0140	jimo@firststateelectric.com
Matthew Celata	Preferred Electric Inc. 505 Churchman's Road New Castle, DE 19720	302-669-6252	mdcelata@preferredinc.net
Ralph Rose	Service Unlimited, Inc. 10 Southgate Blvd. New Castle, DE 19720	302-326-2665	rose@suihvac.com
John Lucey	Delaware Dept. of Safety & Homeland Security Division of Forensic Science 200 S. Adams Street Wilmington, DE 19801	302-407-4664	john.lucey@state.de.us



Name	Company/Address	Phone	E-Mail
Ken Vandegrift	C+D Contractors, Inc. 14 E. 40 th Street Wilmington, DE 19802	302-764-8013	kvandegrift.cd@verizon.net
Kyle Contino	GEM Mechanical Services, Inc. 5101 Birney Highway Aston, PA 19014	610-361-9667 Ext. 105	kyle@gemmsi.com
Michael Travers	State of Delaware Executive Department/OMB 820 N. French Street, 2 nd Floor Wilmington, DE 19801	302-577-8190	Michael.travers@state.de.us
Terry Carroll	Air Handlers Mechanical 208 North White Horse Pike Magnolia, NJ 08049	609-929-3858 800-783-7001	
Gary Mack	State of Delaware OMB 820 N. French Street Wilmington, DE 19801	302-577-8190	gary.mack@state.de.us
Andy Baker	Schlosser & Associates 282 E Main St. Newark, DE 19711	302-738-7333	abakersa@hotmail.com
Phillip Tarlton	Gaudelli Brothers 202 S Wade Blvd. Millville, NJ 08332	856-825-0636	phillip@gaudellibros.com
Ken Woods	Sheet Metal Worker LU19 (IDG)	302-463-7454	kwoods@lu19.com



Name	Company/Address	Phone	E-Mail
Patrick Mullin	Robert Mullin HVAC	302-893-7217	robertmullinhvac@gmail.com
Michael Wolf	Delaware Dept. of Safety & Homeland Security Division of Forensic Science 200 S. Adams Street Wilmington, DE 19801	302-407-4661	michael.wolf@state.de.us
Dean Seely	State of Delaware DFM/OMB 540 S. DuPont Highway Suite 1 Dover, DE 19901	302-233-8203	

BID FORM

DFS – Wilmington: Packaged Rooftop Unit Replacement
220 S. Adams Street, Wilmington, DE
Contract No. MC1002000294

BID FORM

I/We acknowledge Addendums numbered _____ and the price(s) submitted include any cost/schedule impact they may have.

This bid shall remain valid and cannot be withdrawn for sixty (60) days from the date of opening of bids, and the undersigned shall abide by the Bid Security forfeiture provisions. Bid Security is attached to this Bid.

The Owner shall have the right to reject any or all bids, and to waive any informality or irregularity in any bid received.

This bid is based upon work being accomplished by the Sub-Contractors named on the list attached to this bid.

Should I/We be awarded this contract, I/We pledge to achieve substantial completion of all the work within _____ calendar days of the Notice to Proceed.

The undersigned represents and warrants that he has complied and shall comply with all requirements of local, state, and national laws; that no legal requirement has been or shall be violated in making or accepting this bid, in awarding the contract to him or in the prosecution of the work required; that the bid is legal and firm; that he has not, directly or indirectly, entered into any agreement, participated in any collusion, or otherwise taken action in restraint of free competitive bidding.

Upon receipt of written notice of the acceptance of this Bid, the Bidder shall, within twenty (20) calendar days, execute the agreement in the required form and deliver the Contract Bonds, and Insurance Certificates, required by the Contract Documents.

I am / We are an Individual / a Partnership / a Corporation

By _____ Trading as _____
(Individual's / General Partner's / Corporate Name)

(State of Corporation)

Business Address: _____

Witness: _____ **By:** _____
(SEAL) (Authorized Signature)

(Title)
Date: _____

ATTACHMENTS

Sub-Contractor List
Non-Collusion Statement
Bid Security
(Others as Required by Project Manuals)

DFS – Wilmington: Packaged Rooftop Unit Replacement
220 S. Adams Street, Wilmington, DE
Contract No. MC1002000294

BID FORM

SUBCONTRACTOR LIST

In accordance with Title 29, Chapter 6962 (d)(10)b Delaware Code, the following sub-contractor listing must accompany the bid submittal. The name and address of the sub-contractor **must be listed for each category** where the bidder intends to use a sub-contractor to perform that category of work. In order to provide full disclosure and acceptance of the bid by the *Owner*, it is **required that bidders list themselves as being the sub-contractor for all categories where he/she is qualified and intends to perform such work.**

<u>Subcontractor Category</u>	<u>Subcontractor</u>	<u>Address (City & State)</u>	<u>Subcontractors tax payer ID # or Delaware Business license #</u>
1. Electrical	<hr/>	<hr/>	<hr/>
2. Mechanical	<hr/>	<hr/>	<hr/>
3. Metal Fabrications	<hr/>	<hr/>	<hr/>

**Tatnall Building Emergency Generator Replacement
Tatnall Building
150 William Penn St Dover, DE 19901
Contract No. MC1002000254**

BID FORM

NON-COLLUSION STATEMENT

This is to certify that the undersigned bidder has neither directly nor indirectly, entered into any agreement, participated in any collusion or otherwise taken any action in restraint of free competitive bidding in connection with this proposal submitted this date *(to the Office of Management and Budget, Division of Facilities Management)*.

All the terms and conditions of *(Project or Contract Number)* have been thoroughly examined and are understood.

NAME OF BIDDER: _____

**AUTHORIZED REPRESENTATIVE
(TYPED):** _____

**AUTHORIZED REPRESENTATIVE
(SIGNATURE):** _____

TITLE: _____

ADDRESS OF BIDDER: _____

E-MAIL: _____

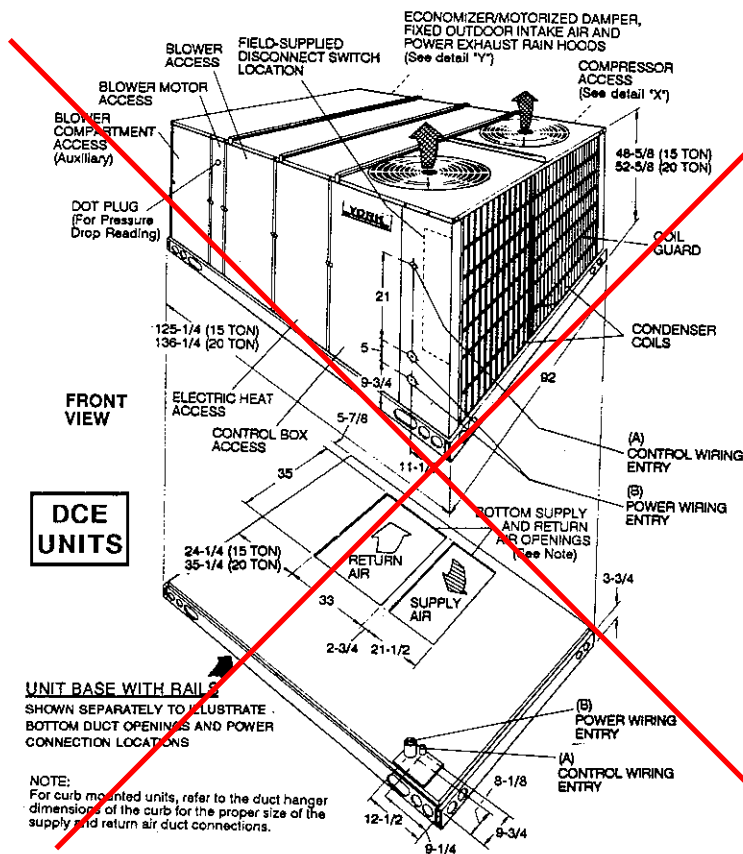
PHONE NUMBER: _____

Sworn to and Subscribed before me this _____ day of _____ 20____.

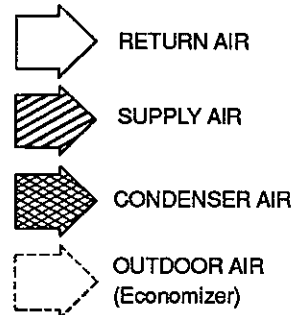
My Commission expires _____. NOTARY PUBLIC _____.

THIS PAGE MUST BE SIGNED AND NOTARIZED FOR YOUR BID TO BE CONSIDERED.

UNIT DIMENSIONS-(DCE AND DCG - 15 & 20 TON)



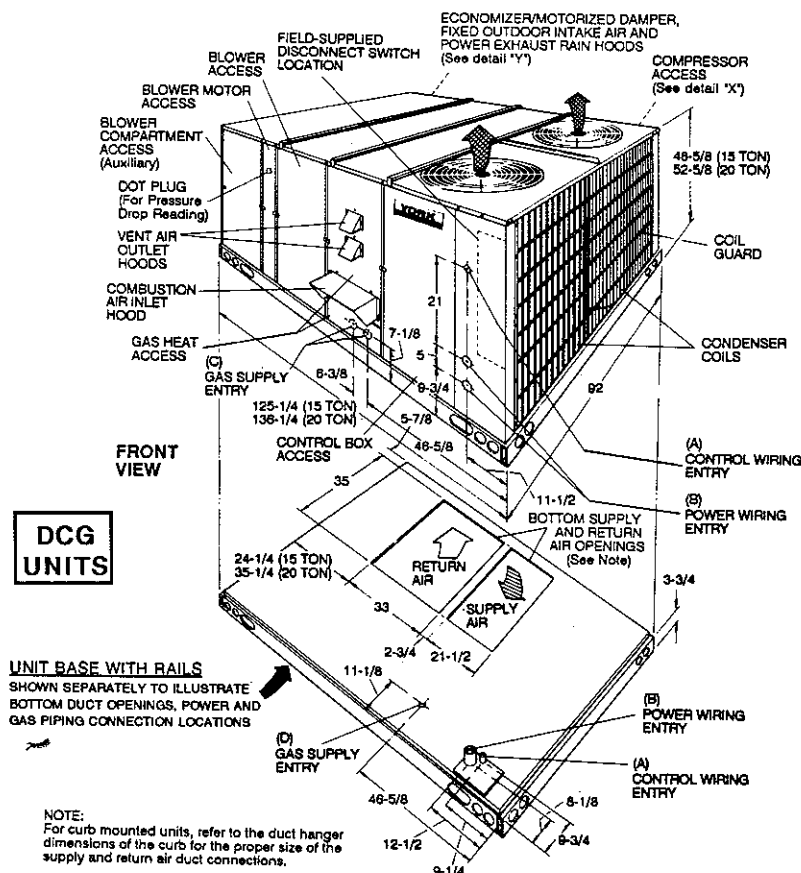
All dimensions are in inches. They are subject to change without notice. Certified dimensions will be provided upon request.



UTILITIES ENTRY DATA

HOLE	OPENING SIZE (DIA.)	USED FOR	
A	1-1/8" KO	Control Wiring	Front
	3/4" NPS (Fem.)	Wiring	Bottom
B	3-5/8" KO	Power Wiring	Front
	3" NPS (Fem.)	Wiring	Bottom
C	2-3/8" KO	Gas Piping (Front)	
D	1-11/16" Hole	Gas Piping (Bottom)*	

*Opening in the bottom of the unit can be located by the slice in the insulation.



CLEARANCES

Front	36"
Back	24" (Less Economizer) 49" (With Economizer)
Left Side (Filter Access)	24"
Right Side (Cond. Coil)	36"
Below Unit ¹	0"
Above Unit ²	60" With 36" Maximum Horizontal Overhang (For Condenser Air Discharge)

¹Units (applicable in U.S.A. only) may be installed on combustible floors made from wood or class A, B or C roof covering material.

²Units must be installed outdoors. Overhanging structures or shrubs should not obstruct condenser air discharge outlet.

NOTE:

DCE Models: Units and ductwork are approved for zero clearance to combustible materials when equipped with electric heaters.

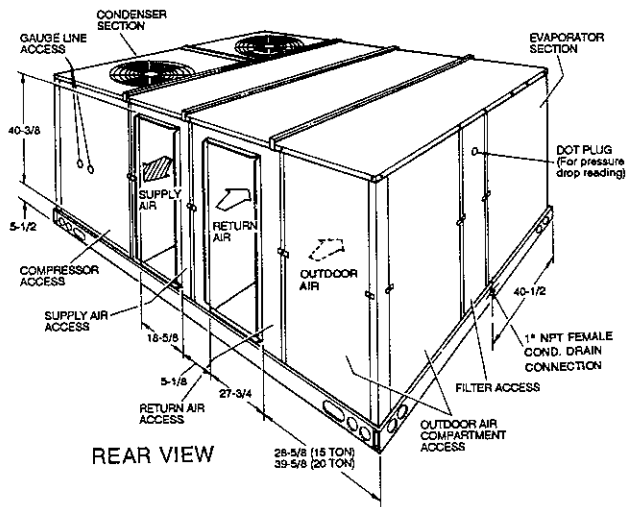
DCG Models: A 1" clearance must be provided between any combustible material and the supply air ductwork for a distance of 3 feet from the unit.

The products of combustion must not be allowed to accumulate within a confined space and recirculate.

Locate unit so that the vent air outlet hood is at least:

- Three (3) feet above any forced air inlet located within 10 horizontal feet (excluding those integral to the unit).
- Four (4) feet below, 4 horizontal feet from, or 1 foot above any door or gravity air inlet into the building.
- Four (4) feet from electric meters, gas meters, regulators and relief equipment.

UNIT DIMENSIONS - CONT'D.-(DCE and DCG - 15 & 20 TON)



DUCT COVERS - Units are shipped with the bottom duct openings covered. An accessory flange kit is available for connecting side ducts.

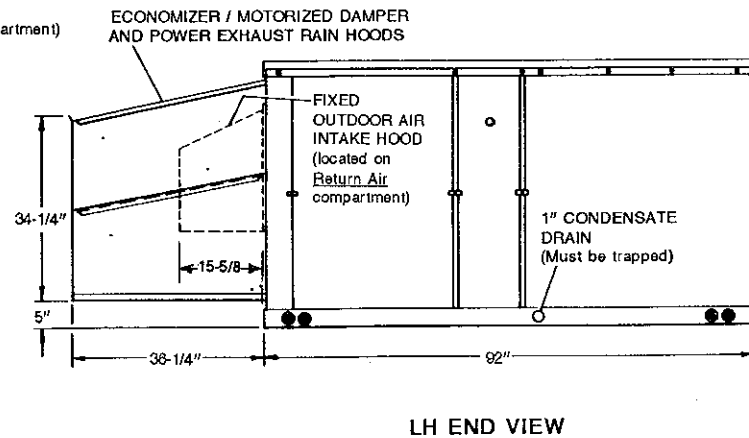
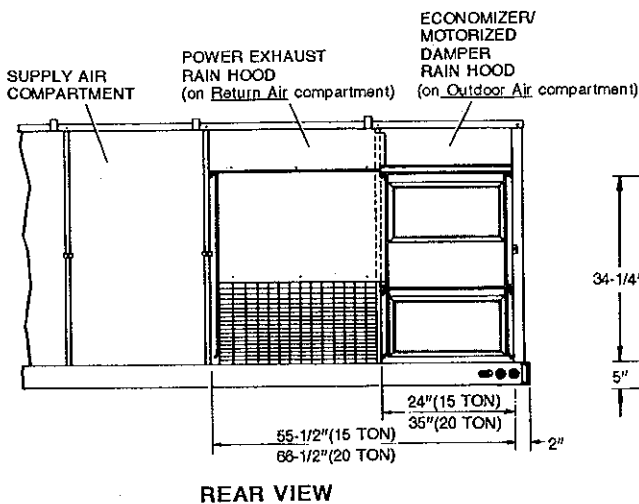
For **bottom** duct applications:

1. Remove the side panels from the supply and return air compartments to gain access to the bottom supply and return air duct covers.
2. Remove and discard the bottom duct covers. (Duct openings are closed with sheet metal covers except when the unit includes a power exhaust option. The covering consists of a heavy black paper composition.)
3. Replace the side supply and return air compartment panels.

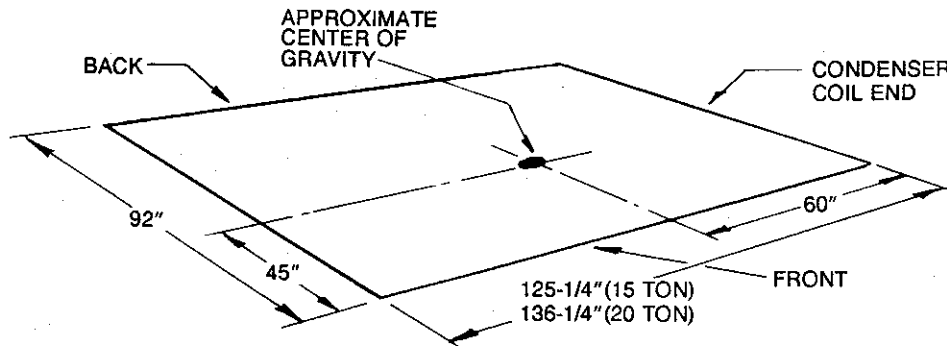
For **side** duct applications:

1. Replace the side panels on the supply and return air compartments with the accessory flange kit panels.
2. Connect ductwork to the duct flanges on the rear of the unit.

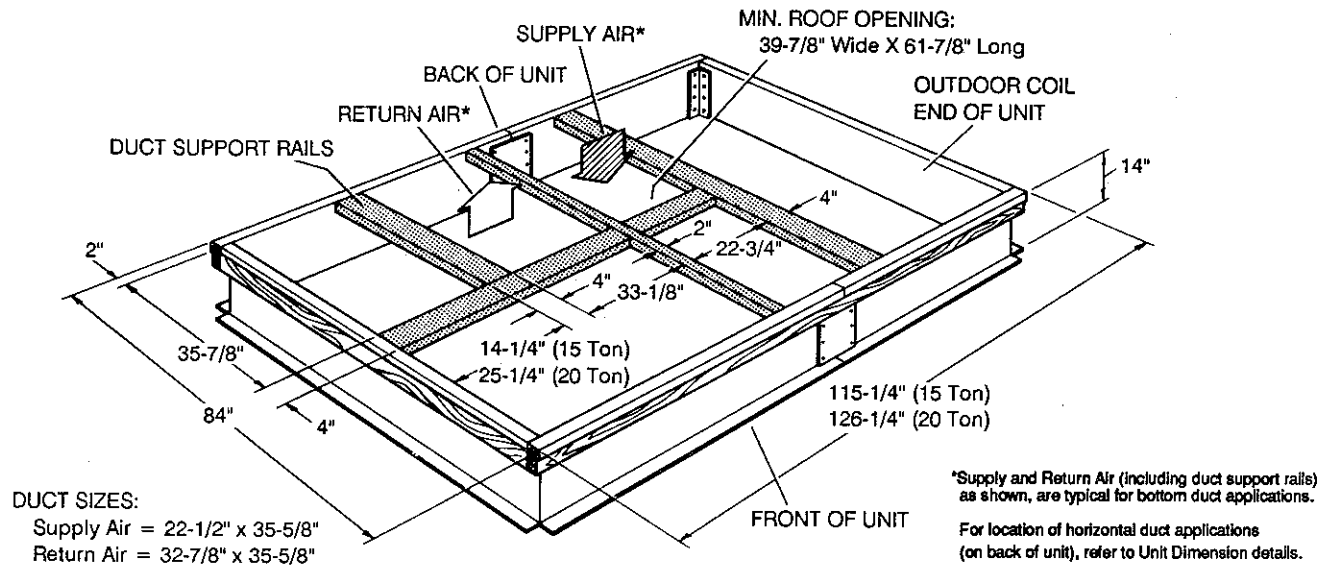
DETAIL "X" ACCESSORY SIDE SUPPLY AND RETURN AIR OPENINGS



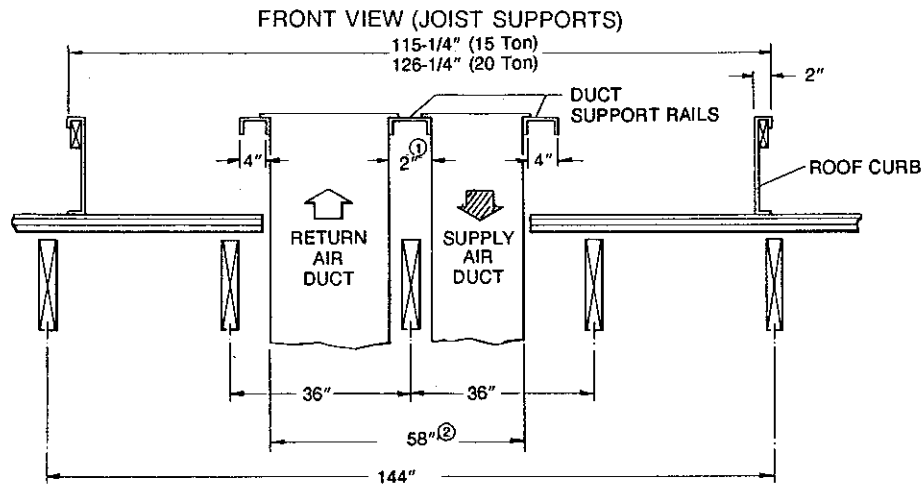
DETAIL "Y" UNIT WITH RAIN HOODS



ROOF CURB DIMENSIONS-(DCE and DCG - 15 & 20 TON)



ROOF CURB BENEFITS

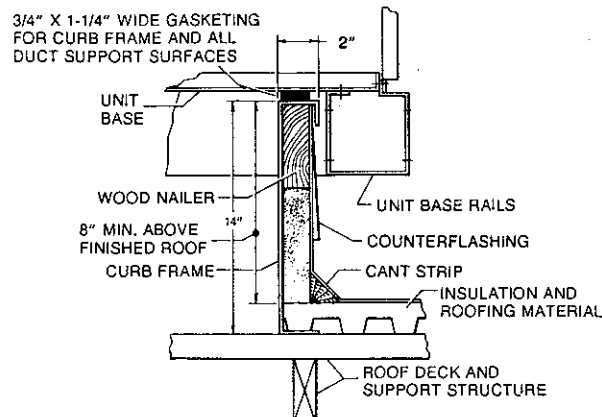


① The 2" space between the ducts allows for "jumping" an existing roof joist.

② The 58-1/2" overall dimension of the ducts allows ductwork penetration between roof joists that are spaced on 72" centers.

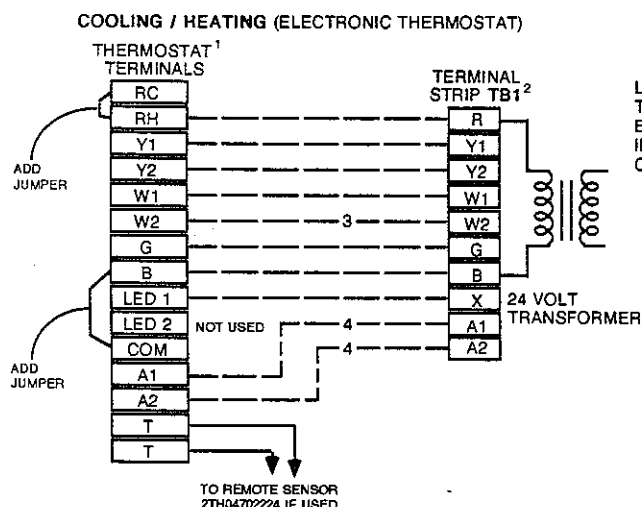
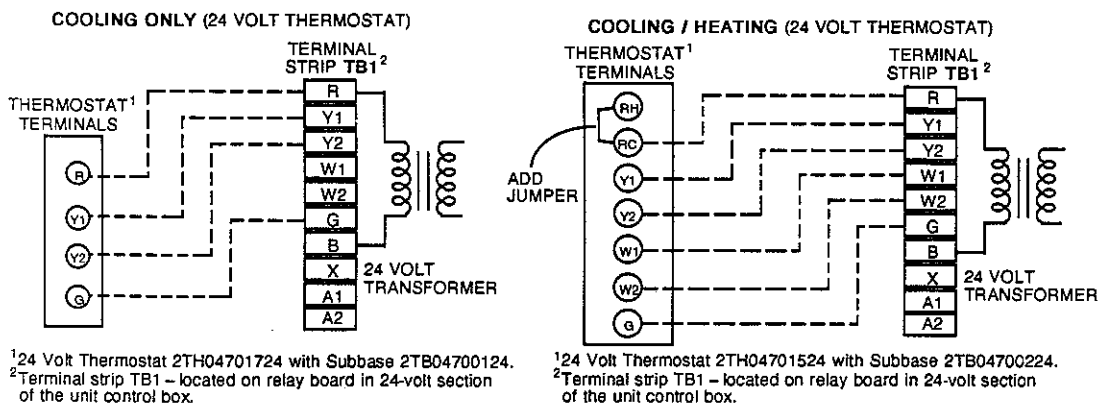
NOTE: Ducts can be installed onto the curb from the roof. All electrical and gas line connections can be made inside the curb.

UNIT AND CURB APPLICATION

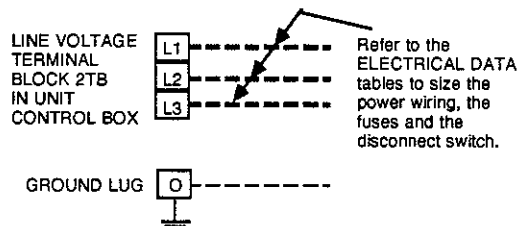


FIELD WIRING - DCE/DCG Electric/Electric and Gas/Electric Units

CONTROL WIRING



POWER WIRING



ELECTRICAL DATA - Cooling Only Units and Units With Gas Heat

MODEL	POWER SUPPLY	COMPRESSORS				COND. FAN MOTORS (#1 & #2)		SUPPLY AIR BLOWER MOTOR		MINIMUM CIRCUIT AMPACITY (AMPS)	MAXIMUM TIME DELAY FUSE SIZE (AMPS)	MINIMUM WIRE SIZE* (AWG)	
		#1		#2								60°C	75°C
		RLA	LRA	RLA	LRA	HP EACH	FLA EACH	HP	FLA				
D2CE180 D2CG180	208/230-3-60	38.4	248	19.2	124	1	4.1/4.2	5	15.4/14.4	87.1/84.9	100	2/3	3/4
	460-3-60	19.2	124	9.6	62	1	2.1	5	7.2	42.4	50	6	8
	575-3-60	15.4	100	7.7	50	1	2.0	5	5.9	33.9	40	8	8
D2CE240 D2CG240	208/230-3-60	38.4	248	38.4	248	1	4.1/4.2	7.5	21.0/19.4	115.1/111.6	125	-	1/2
	460-3-60	19.2	124	19.2	124	1	2.1	7.5	9.7	55.8	60	4	6
	575-3-60	15.4	100	15.4	100	1	2.0	7.5	7.8	44.8	50	6	8

*Although these sizes are based on copper conductors, aluminum wire can be used. Refer to the National Electric Code (in U.S.A.) or the current Canadian Electrical Code (in Canada) to determine the proper size.

VOLTAGE LIMITATIONS**	POWER SUPPLY	VOLTAGE	
		MIN.	MAX.
	208/230-3-60	187	253
	460-3-60	414	506
	575-3-60	518	630

**Utilization Range "A" in accordance with ARI Standard 110.

ELECTRICAL DATA - Units With Electric Heat

MODEL D2CE	POWER SUPPLY	HEATER OPTION				MINIMUM CIRCUIT AMPACITY (AMPS)	MAXIMUM TIME DELAY FUSE SIZE (AMPS)	MINIMUM WIRE SIZE ² (AWG)	
		MODEL	KW ¹	STAGES	AMPS			60°C	75°C
180A25	208-3-60	E018	13.5	1	37.5	87.1	100	2	3
		E036	27.0	2	75.1	114.7	125	-	2
		E054	40.6	2	112.6	161.6	175	-	00
		E072	54.1	2	150.1	171.0	200	-	00
	230-3-60	E018	18.0	1	43.3	84.9	100	3	4
		E036	36.0	2	86.6	127.3	150	-	1
		E054	54.0	2	129.9	148.9	175	-	0
		E072	72.0	2	173.2	192.2	225	-	000
180A46	460-3-60	E018	18.0	1	21.7	42.4	50	6	8
		E036	36.0	2	43.3	63.6	70	4	6
		E054	54.0	2	65.0	74.5	90	3	4
		E072	72.0	2	86.6	96.1	110	1	3
180A58	575-3-60	E018	18.0	1	17.3	33.9	40	8	8
		E036	36.0	2	34.6	50.9	60	6	6
		E054	54.0	2	52.0	59.6	70	4	6
		E072	72.0	2	69.3	76.9	90	3	4
240A25	208-3-60	E018	13.5	1	37.5	115.1	125	-	1
		E036	27.0	2	75.1	124.1	125	-	1
		E054	40.6	2	112.6	171.0	175	-	00
		E072	54.1	2	150.1	180.4	200	-	000
	230-3-60	E018	18.0	1	43.3	111.6	125	-	2
		E036	36.0	2	86.6	135.8	150	-	0
		E054	54.0	2	129.9	157.4	175	-	00
		E072	72.0	2	173.2	200.7	225	-	0000
240A46	460-3-60	E018	18.0	1	21.7	55.8	60	4	6
		E036	36.0	2	43.3	67.9	70	4	4
		E054	54.0	2	65.0	78.7	90	3	4
		E072	72.0	2	86.6	100.4	110	-	2
240A58	575-3-60	E018	18.0	1	17.3	44.8	50	6	8
		E036	36.0	2	34.6	54.6	60	6	6
		E054	54.0	2	52.0	63.2	70	4	6
		E072	72.0	2	69.3	80.5	90	3	4

¹Electric 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

²Although these sizes are based on copper conductors, aluminum wire can be used. Refer to the National Electric code (in U.S.A.) or the current Canadian Electrical Code (in Canada) to determine the proper size.**PHYSICAL DATA****BASIC UNITS**

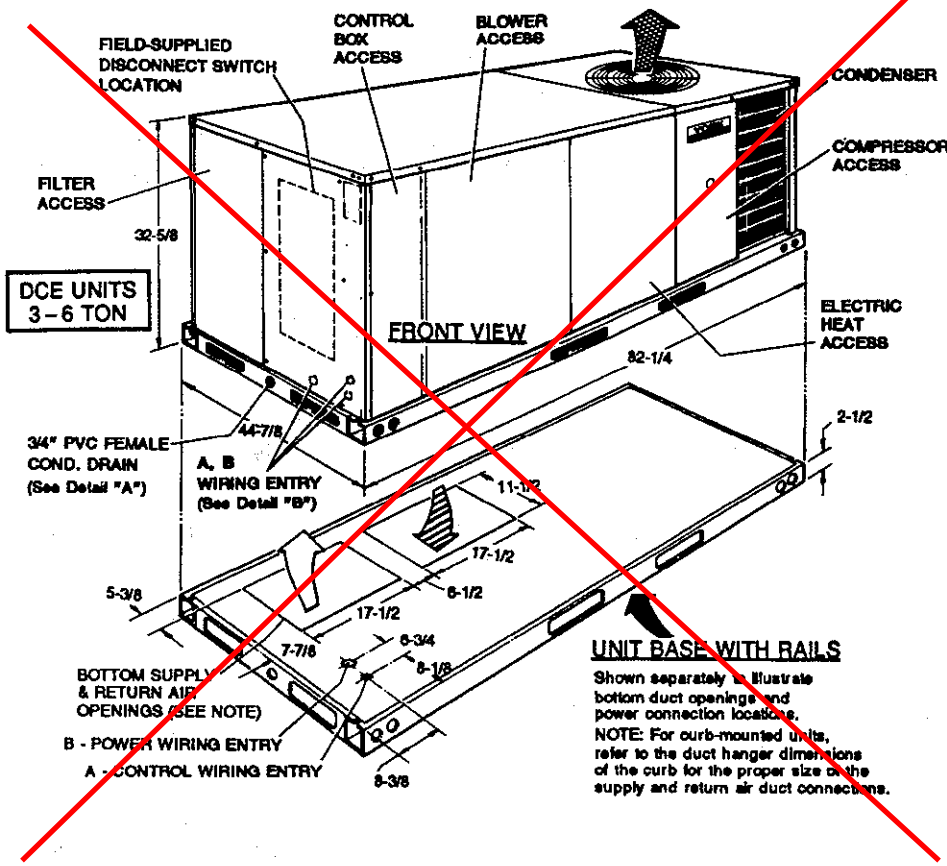
MODELS		DCE/DCG	
		180	240
EVAPORATOR BLOWER	CENTRIFUGAL BLOWER (Dia. x Wd. in.)	15 x 15	18 x 15
	FAN MOTOR HP	5	7.5
EVAPORATOR COIL	ROWS DEEP	3	3
	FINS PER INCH	13.5	13.5
	FACE AREA (Sq. Ft.)	15.5	20.5
CONDENSER FAN (Two Per Unit)	PROPELLER DIA. (in.) (Each)	30	30
	FAN MOTOR HP (Each)	1	1
	NOM. CFM TOTAL (Each)	6500	7200
CONDENSER COIL	ROWS DEEP	2	2
	FINS PER INCH	13	20
	FACE AREA (Sq. Ft.)	36.0	43.3
COMPRESSOR (Qty. Per Unit)	10-TON TANDEM	1*	2
	5-TON HERMETIC	1	-
AIR FILTERS	QUANTITY PER UNIT (16" X 20" X 2")	-	4
	QUANTITY PER UNIT (16" X 25" X 2")	-	4
	QUANTITY PER UNIT (18" X 24" X 2")	5	-
	TOTAL FACE AREA (sq. ft.)	15.0	20.0
CHARGE	REFRIGERANT 22 (lbs./oz.)	SYSTEM NO. 1	17/8
		SYSTEM NO. 2	18/0

*This compressor will be energized first.

OPERATING WEIGHTS (LBS.)

MODEL SIZE		180	240
Basic Unit	DCE (Cooling only)	1900	2100
	DCG	2100	2300
	(Gas / Electric)	N240 2140	N320 2340
Options	Economizer	160	
	Economizer with Power Exhaust	245	
	Motorized Damper	150	
	Electric Heater (DCE only)	18 KW	25
		36 KW	30
		54 KW	35
		72 KW	40
Accessories	Roof Curb	175	185
	Barometric Damper	45	45
	Wood Skid	200	220

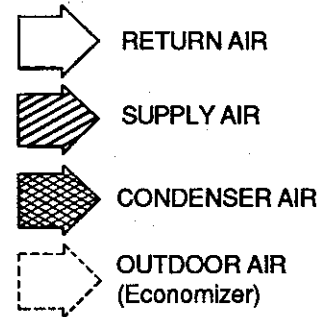
UNIT DIMENSIONS (DCE AND DCG - 3, 4, 5 & 6 TON)



UNIT BASE WITH RAILS

Shown separately to illustrate bottom duct openings and power connection locations. NOTE: For curb-mounted units, refer to the duct hanger dimensions of the curb for the proper size of the supply and return air duct connections.

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



UTILITIES ENTRY DATA

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

CLEARANCES

Front	DCE Units	24"
	DCG Units	32"
Back		12" (Less Economizer)
		36" (With Economizer)
Left Side (Filter Access)		24" (Less Economizer)
		36" (With Economizer)
Right Side (Cond. Coil)		24"
	Below Unit ¹	0"
Above Unit ²		72" (For Condenser Air Discharge)

¹ Units may be installed on combustible floors made from wood or class A, B or C roof covering material.

² Units must be installed outdoors. Overhanging structures or shrubs should not obstruct condenser air discharge outlet.

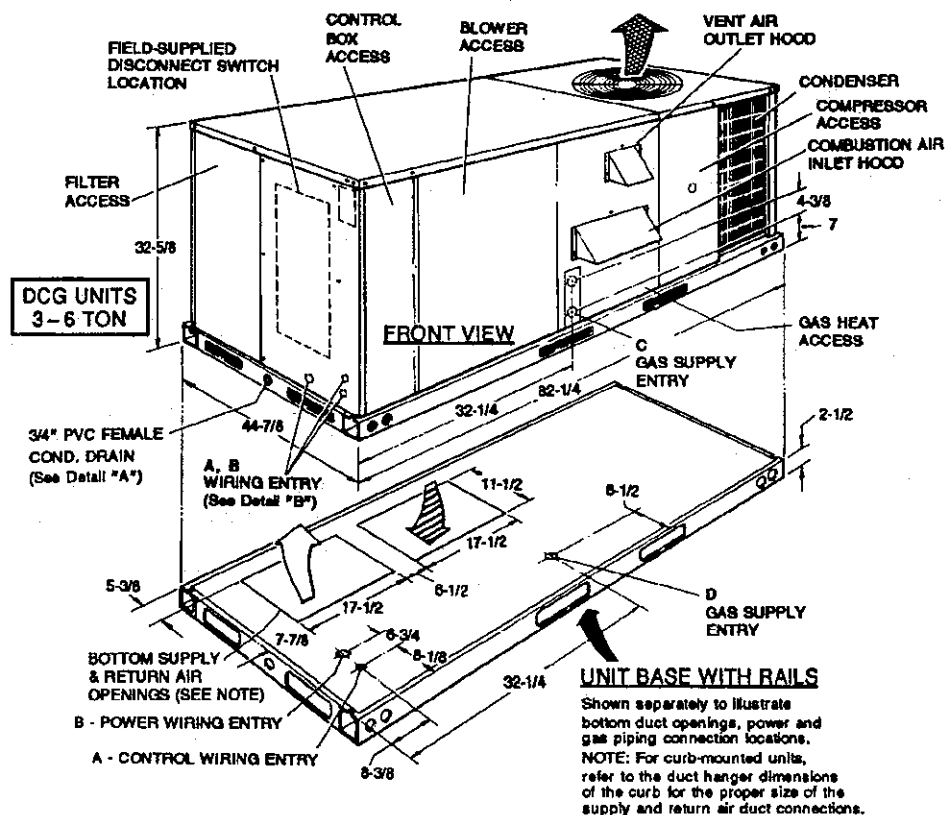
NOTES:

DCE Models: Units and ductwork are approved for zero clearance to combustible materials when equipped with electric heaters.

DCG Models: A 1" clearance must be provided between any combustible material and the supply air ductwork for a distance of 3 feet from the unit.

The products of combustion must not be allowed to accumulate within a confined space and recirculate. Locate unit so that the vent air outlet hood is at least:

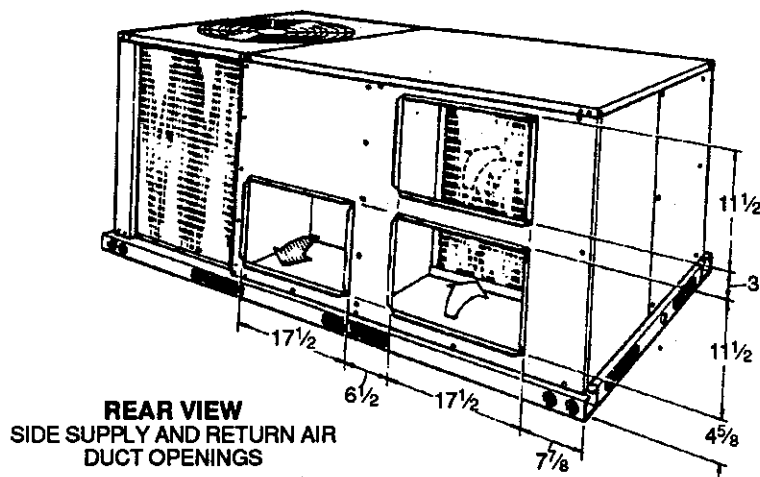
- Three (3) feet above any forced air inlet located within 10 horizontal feet (excluding those integral to the unit).
- Four (4) feet below, 4 horizontal feet from, or 1 foot above any door or gravity air inlet into the building.
- Four (4) feet from electric meters, gas meters, regulators and relief equipment.



UNIT BASE WITH RAILS

Shown separately to illustrate bottom duct openings, power and gas piping connection locations. NOTE: For curb-mounted units, refer to the duct hanger dimensions of the curb for the proper size of the supply and return air duct connections.

UNIT DIMENSIONS - CONT'D. (DCE and DCG - 3, 4, 5 & 6 TON)



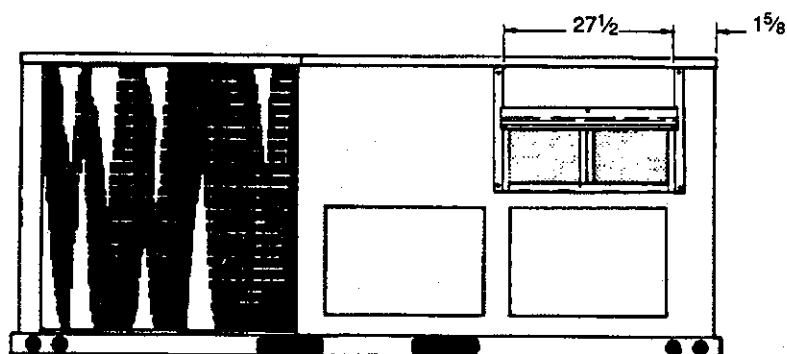
DUCT COVERS - Units are shipped with all air duct openings covered.

For side duct applications;

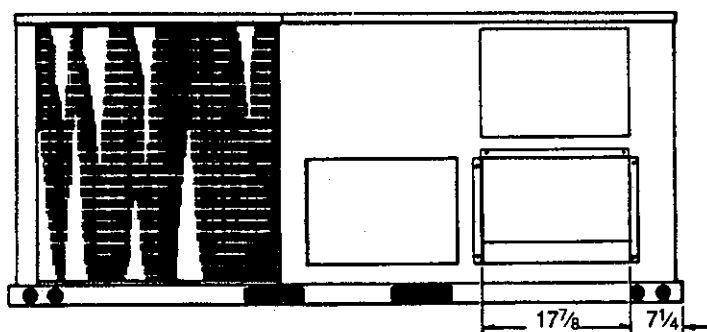
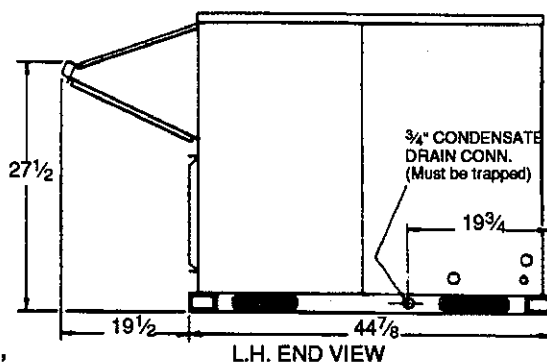
1. Remove and discard the supply and return air duct covers.
2. Connect ductwork to duct flanges on the rear of the unit.

For bottom duct applications;

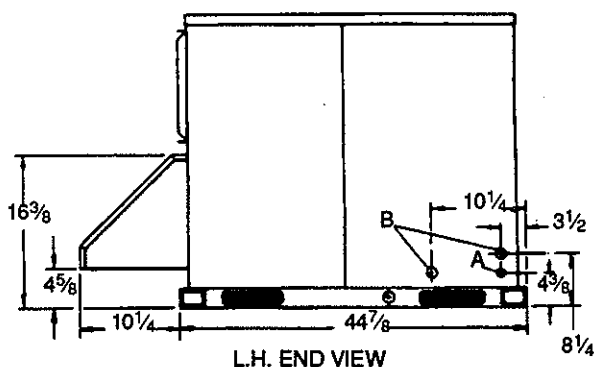
1. Remove the side supply air duct cover to gain access to the bottom supply air knockout panel.
2. Remove and discard the bottom knockout panel.
3. Replace the side duct cover.
4. With filter section access panel removed from the unit, remove and discard the bottom return air knockout panel.



DETAIL "A"
UNIT WITH ECONOMIZER RAINHOOD

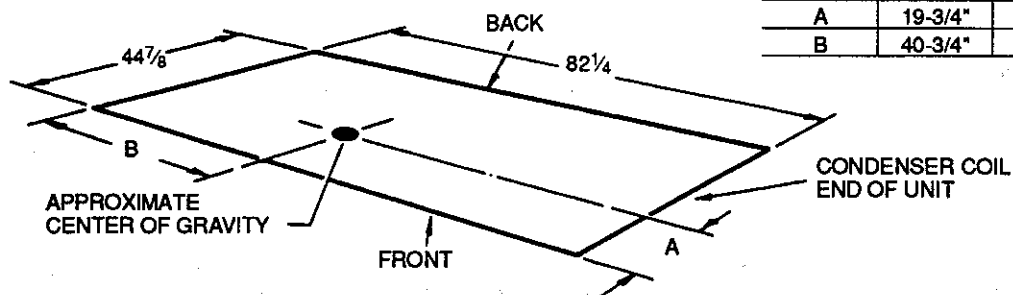


DETAIL "B"
UNIT WITH FIXED OUTDOOR AIR / BAROMETRIC RELIEF RAINHOOD



CENTER
OF
GRAVITY

DCE and DCG
3, 4, 5 & 6 TON



DIM.	3 - 5 TON	6 TON
A	19-3/4"	22"
B	40-3/4"	44"



Diagram illustrating the layout of a roof curb with return and supply air ducts. The diagram shows a cross-section of the curb with two ducts: a RETURN AIR DUCT on the left and a SUPPLY AIR DUCT on the right. The total width of the curb is 73". The distance between the centerlines of the two ducts is 4-1/2". The return air duct has a width of 24" and the supply air duct has a width of 24". The distance from the outer edge of the curb to the centerline of the return air duct is 24". The distance from the centerline of the supply air duct to the outer edge of the curb is 2". The distance from the centerline of the return air duct to the centerline of the supply air duct is 4-1/2". The distance from the centerline of the supply air duct to the outer edge of the curb is 2". The diagram also shows the ROOF CURB and SUPPORT RAILS.

Diagram illustrating the layout of a roof curb with return and supply air ducts. The diagram shows a cross-section of the curb with a return air duct on the left and a supply air duct on the right. The return air duct has an upward arrow and is labeled "RETURN AIR DUCT". The supply air duct has a downward arrow and is labeled "SUPPLY AIR DUCT". The ducts are separated by a 4-1/2" gap. The total width of the curb is 73". The return air duct is 43-1/2" wide, and the supply air duct is 48" wide. The ducts are supported by a 2" gap. The roof curb is labeled "ROOF CURB". The support rails are labeled "SUPPORT RAILS". The diagram also shows an alternate layout with a 72" width and a 48" duct width.

Central Environmental Systems

COMPONENT WEIGHTS

COMPONENT			MODELS DCE & DCG			
			3 TON	4 TON	5 TON	6 TON
Basic Unit	DCE (Cooling only)		545	585	610	670
	DCG (Gas / Electric)	41 Mbh	605	-	-	-
		62 Mbh	-	645	-	-
		82 Mbh	615	-	670	725
		103 Mbh	-	655	680	735
Options and Accessories	Economizer		50			
	Motorized Outdoor Air Damper		48			
	Electric Heat (Nominal KW) (DCE only)	005 - 007	16			
		010 - 015	18			
		020 - 030	20			
	Roof Mounting Curb		92			
	Relief / Fixed Air Damper		10			

NOTE: Weights are given in pounds.

ELECTRICAL DATA - Basic Units

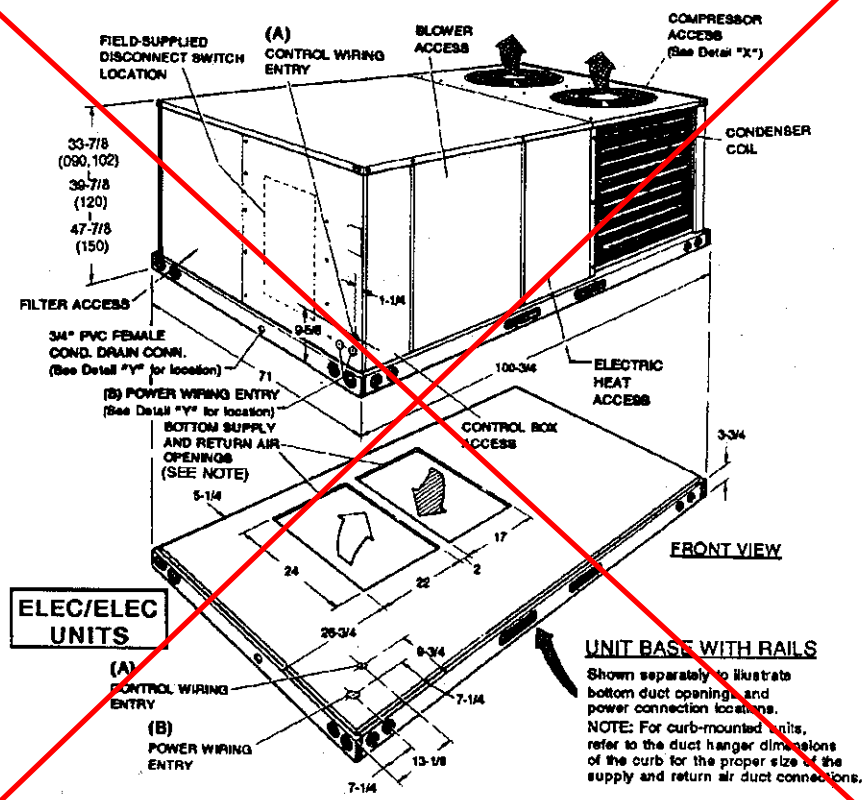
MODEL DCE DCG	POWER SUPPLY	VOLTAGE LIMITATIONS (SEE NOTE 1)		COMPRESSOR		COND. FAN MOTOR, FLA	SUPPLY AIR BLOWER MOTOR, FLA	TOTAL UNIT CAPACITY, AMPS	MAX. FUSE SIZE, (SEE NOTE 2) AMPS	MAX. HACR BREAKER SIZE, AMPS	MIN. WIRE SIZE, AWG (SEE NOTE 3)
		MIN.	MAX.	RLA	LRA						
036	208/230-1-60	187	253	19.2	87	2.3	4.4	30.7	45	45	8
	208/230-3-60	187	253	14.1	110	2.3	4.4	24.3	35	35	10
	460-3-60	414	504	7.1	54	1.4	2.2	12.5	15	15	14
	575-3-60	518	630	5.8	44	1.4	2.2	10.9	15	-	14
048	208/230-1-60	187	253	23.1	105	2.3	5.0	36.2	50	50	8
	208/230-3-60	187	253	14.7	130	2.3	5.0	25.7	40	40	10
	460-3-60	414	504	7.1	64	1.4	2.2	12.5	15	15	14
	575-3-60	518	630	6.4	52	1.4	2.2	11.6	15	-	14
060	208/230-1-60	187	253	28.2	135	2.3	6.6	44.2	70	70	6
	208/230-3-60	187	253	16.7	150	2.3	6.6	29.8	45	45	10
	460-3-60	414	504	9.6	73	1.4	3.3	16.7	25	25	12
	575-3-60	518	630	8.3	59	1.4	3.3	15.1	20	-	12
076	208/230-3-60	187	253	28.2	220	2.3	6.8	44.4	70	70	6
	460-3-60	414	504	14.1	108	1.3	3.6	22.5	35	25	10
	575-3-60	518	630	11.5	88	1.3	3.6	19.3	30	-	12

NOTES: 1. Utilization Range "A" in accordance with ARI Standard 110.

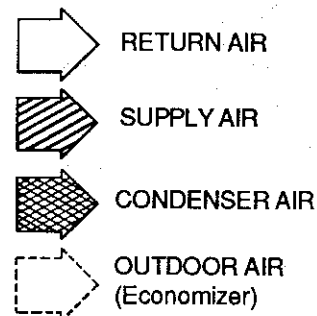
2. Dual element, time delay type.

3. Based on 60°C copper conductors.

UNIT DIMENSIONS (DCE AND DCG - 7-1/2 THRU 12-1/2 TON)



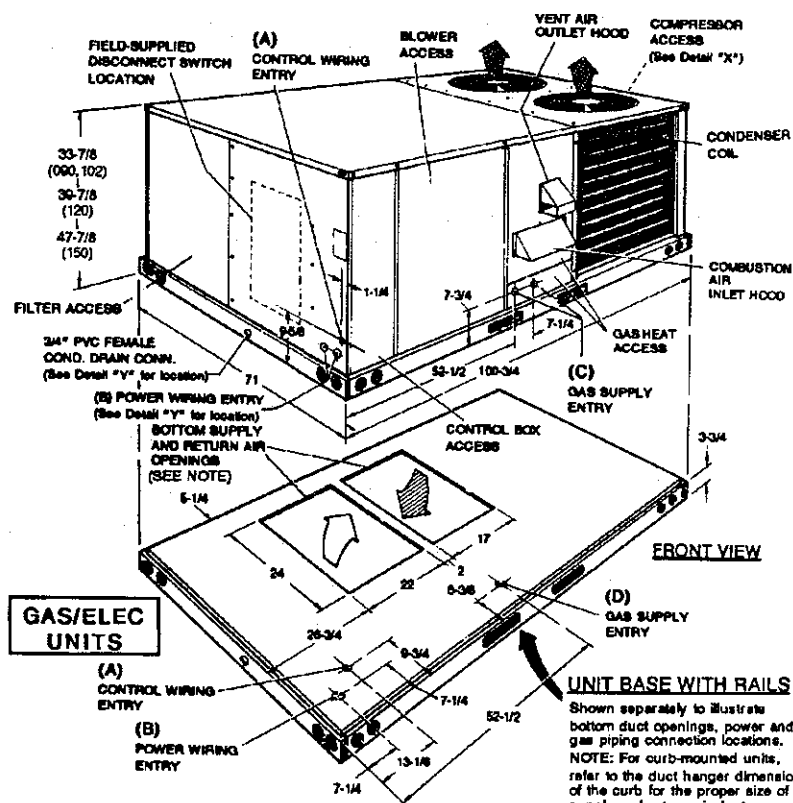
All dimensions are in inches. They are subject to change without notice. Certified dimensions will be provided upon request.



UTILITIES ENTRY DATA

HOLE	OPENING SIZE (DIA.)	USED FOR	
A	3/4\" KO	Control Wiring	Side
	7/8\" KO		Bottom*
B	2\" KO	Power Wiring (Side or Bottom)*	
C	2\" KO	Gas Piping (Front)	
D	1-11/16\" Hole	Gas Piping (Bottom)*	

*Openings in the bottom of the unit can be located by the slice in the insulation.



CLEARANCES

Front	24"
Back	12" (Less Economizer) 36" (With Economizer)
Left Side (Filter Access)	24" (Less Economizer) 54" (With Economizer)
Right Side (Cond. Coil)	24"
Below Unit ¹	0"
Above Unit ²	72" With 36" Maximum Horizontal Overhang (For Condenser Air Discharge)

¹Units may be installed on combustible floors made from wood or class A, B or C roof covering material.

²Units must be installed outdoors. Overhanging structures or shrubs should not obstruct condenser air discharge outlet.

NOTE:

DCE Models: Units and ductwork are approved for zero clearance to combustible materials when equipped with electric heaters.

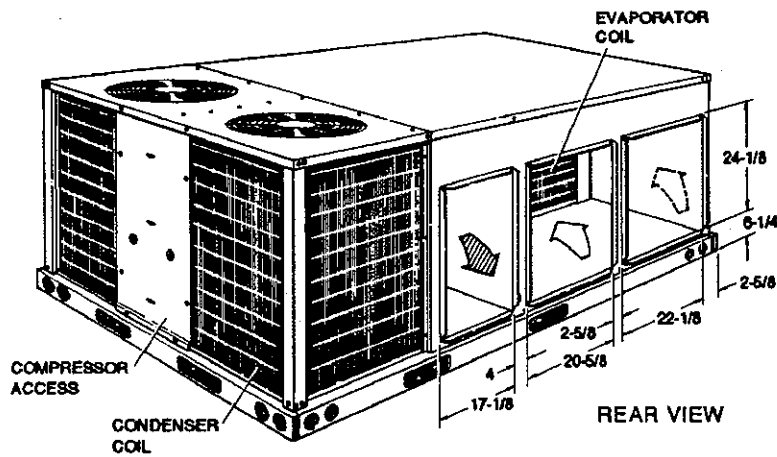
DCG Models: A 1" clearance must be provided between any combustible material and the supply air ductwork for a distance of 3 feet from the unit.

The products of combustion must not be allowed to accumulate within a confined space and recirculate.

Locate unit so that the vent air outlet hood is at least:

- Three (3) feet above any forced air inlet located within 10 horizontal feet (excluding those integral to the unit).
- Four (4) feet below, 4 horizontal feet from, or 1 foot above any door or gravity air inlet into the building.
- Four (4) feet from electric meters, gas meters, regulators and relief equipment.

UNIT DIMENSIONS - CONT'D. (DCE and DCG - 7-1/2 THRU 12-1/2 TON)



DUCT COVERS - Units are shipped with all air duct openings covered.

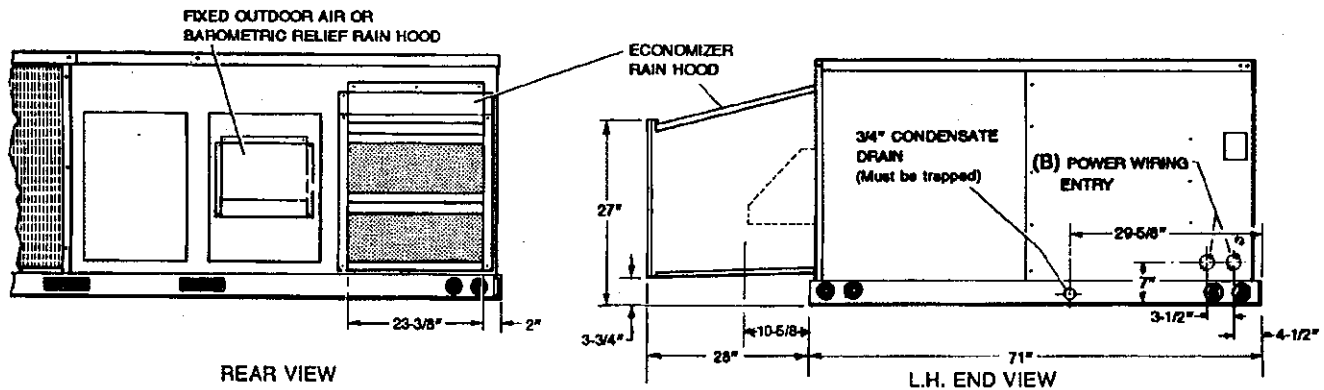
For side duct applications;

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

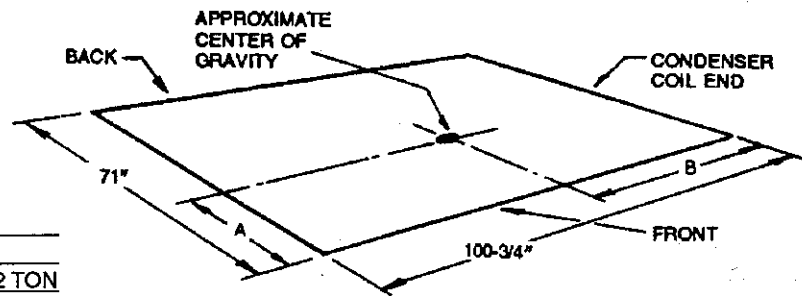
For bottom duct applications;

1. Remove the side supply and return air duct covers to gain access to the bottom supply and return air duct covers.
2. Remove and discard the bottom duct covers.
3. Replace the side duct covers.

DETAIL "X"
SIDE SUPPLY AND RETURN AIR DUCT OPENINGS



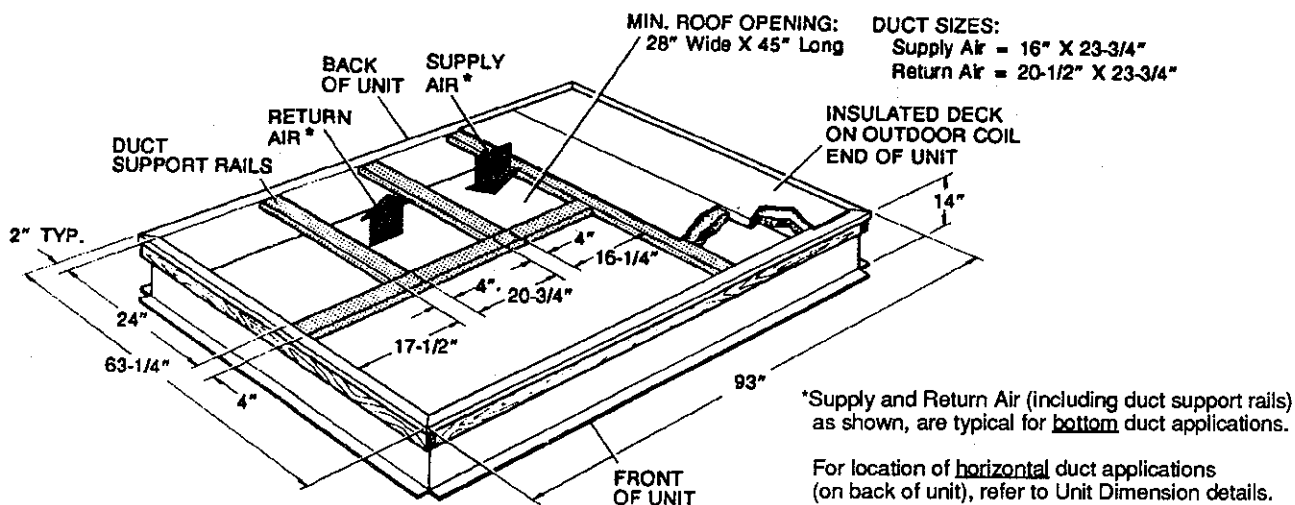
DETAIL "Y"
UNIT WITH ECONOMIZER AND FIXED OUTDOOR AIR HOODS



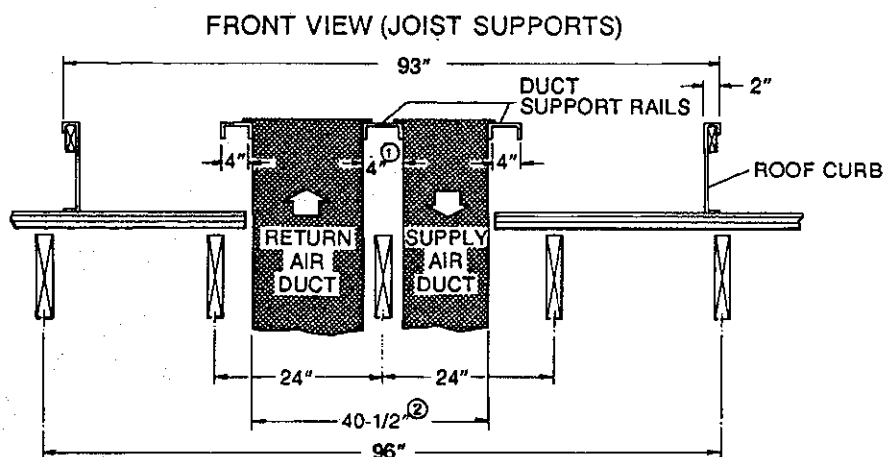
DIM.	UNIT			
	7-1/2 TON	8-1/2 TON	10 TON	12-1/2 TON
A	33-1/4"	32"	32-1/2"	32-1/2"
B	47-1/2"	44-1/2"	46-3/4"	45"

CENTER OF GRAVITY

ROOF CURB DIMENSIONS - (DCE and DCG - 7-1/2 THRU 12-1/2 TON)



ROOF CURB BENEFITS

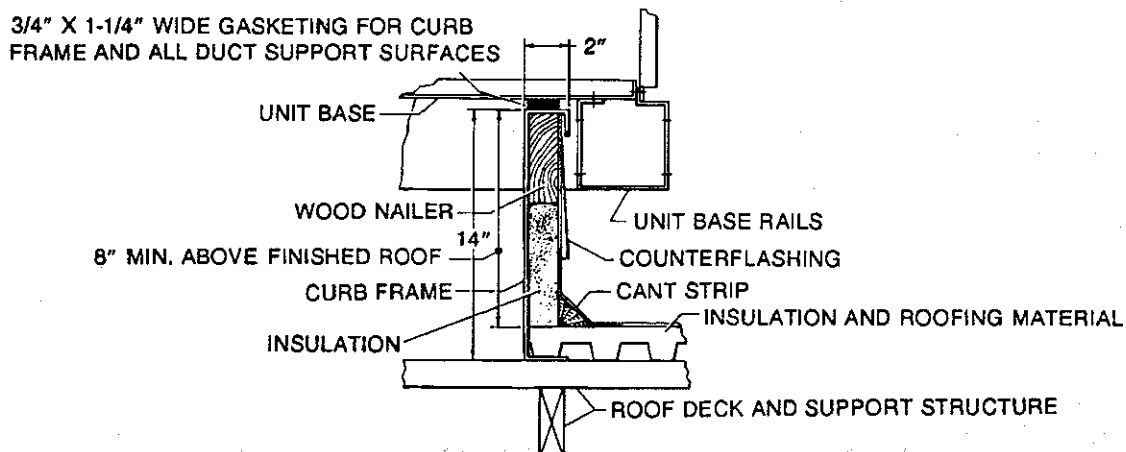


① The 4" space between the ducts allows for "jumping" an existing roof joist.

② The 41" overall dimension of the ducts allows ductwork penetration between roof joists that are spaced on 48" centers.

NOTE: Ducts can be installed onto the curb from the roof. All electrical and gas line connections can be made inside the curb.

UNIT AND CURB APPLICATION



BLOWER MOTOR AND DRIVE DATA

MODELS	BLOWER RANGE (RPM)	MOTOR*				ADJUSTABLE MOTOR PULLEY		FIXED BLOWER PULLEY		BELTS		
		HP	SERVICE FACTOR	FRAME SIZE	EFFICIENCY (%)	PITCH DIA. (IN.)	BORE (IN.)	PITCH DIA. (IN.)	BORE (IN.)	PITCH LENGTH (IN.)	DESIG-NATION	QTY.
DCE090	975-1220	1-1/2, 2	1.20	56	82.0	3.4 - 4.4	7/8	6.2	1	50.3	A49	1
DCG090		2										
DCE102		2, 3										
DCG102												
DCE120	860-1090	2, 3	1.20	56	82.0	3.4 - 4.4	7/8	7.0	1	57.3	A56	1
DCG120		3										
DCE150												
DCG150												
DCE150	960-1140	5	1.15	184	82.0	4.9 - 5.9	1-1/8	8.9	1	62.8	BX61 (Notched)	1
DCG150												

* All motors are 1750 RPM, have solid bases 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.

ACCESSORY STATIC RESISTANCES*

EXTERNAL STATIC PRESSURE DROP							
MODELS	DESCRIPTION		RESISTANCE, IWG				
			CFM				
			2250	3000	4000	5000	6000
DCE DCG	Economizer/Motorized Damper		0.02	0.02	0.03	0.05	0.07
DCE	Electric Heaters	9 KW**	0.06	0.11	0.20	0.31	0.45
		18 KW					
		36 KW	0.07	0.13	0.23	0.35	0.52
		54 KW***	-	0.15	0.26	0.40	0.58

*Deduct these resistance values from the available unit external static pressure shown in the respective Blower Performance Table.

**9 KW Heater is only available on 7-1/2 and 8-1/2 Ton Units.

***54 KW Heater is only available on 10 and 12-1/2 Ton Units.

COMPONENT WEIGHTS

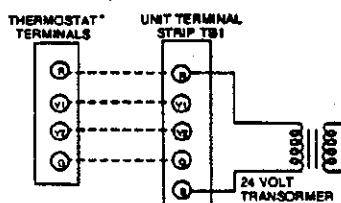
COMPONENT			MODELS DCE & DCG			
			7-1/2 TON	8-1/2 TON	10 TON	12-1/2 TON
Basic Unit	DCE (Cooling only)		1000	1025	1100	1250
	DCG (Gas / Electric)	130 Mbh	1080	1105	-	-
		165 Mbh	1100	1125	1200	1450
		200 Mbh	-	-	1220	1470
Options and Accessories	Economizer		77	77	77	77
	Motorized Outdoor Air Damper		75	75	75	75
	Oversized Motor		10	15	15	35
	Electric Heat (Nominal KW) (DCE only)	9 KW	19	19	-	-
		18 KW	24	24	24	24
		36 KW	30	30	30	30
		54 KW	-	-	37	37
	Roof Mounting Curb		155	155	155	155

NOTE: Weights are given in pounds.

FIELD WIRING - DCE/DCG Electric/Electric and Gas/Electric Units

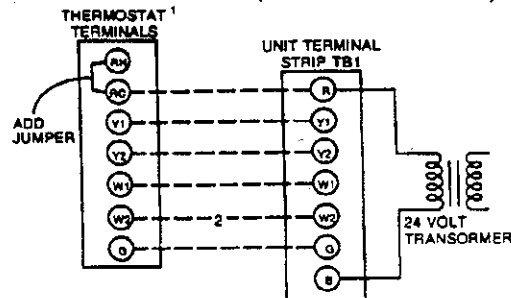
CONTROL WIRING

COOLING ONLY (24 VOLT THERMOSTAT)



*24 Volt Thermostat 2TH04701224.

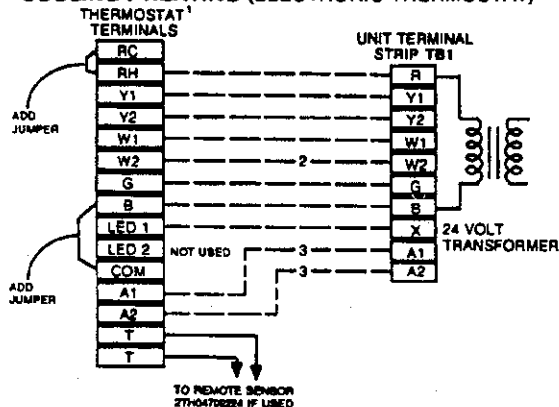
COOLING / HEATING (24 VOLT THERMOSTAT)



¹24 Volt Thermostat 2TH04701024.

²Second stage heating is not required on units with a single stage electric heater.

COOLING / HEATING (ELECTRONIC THERMOSTAT)

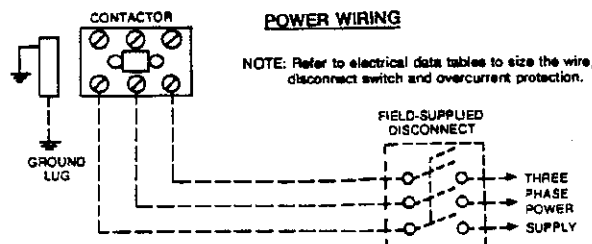


¹Electronic programmable Thermostat 2ET04700224 (includes subbase).

²Second stage heating is not required on units with a single stage electric heater.

³Terminals A1 and A2 provide a relay output to close the outdoor economizer dampers when the thermostat switches to the set-back position.

POWER WIRING



ELECTRICAL DATA - Basic Units

MODEL	POWER SUPPLY	COMPRESSOR (#1 and #2) ¹		OUTDOOR FAN MOTOR, (#1 & #2) FLA EACH	SUPPLY AIR BLOWER MOTOR, FLA				TOTAL UNIT AMPACITY, AMPS				MAX. FUSE SIZE ² AMPS	MIN. WIRE SIZE, ³ AWG			
		RLA EACH	LRA EACH		1.5HP	2HP	3HP	5HP	1.5HP	2HP	3HP	5HP		1.5HP	2HP	3HP	5HP
D2CE090	208/230-3-60	11.90	130	2.3	5.7	7.5	-	-	37.1	38.9	-	-	45/50	8	8	-	-
D3CG090	460-3-60	5.60	64	1.3	2.6	3.4	-	-	17.8	18.6	-	-	20	12	12	-	-
	575-3-60	5.20	39	1.3	2.1	2.7	-	-	16.4	17.0	-	-	20	12	12	-	-
D2CE102	208/230-3-60	16.00	137	2.3	-	7.5	10.6	-	-	48.2	51.3	-	60	-	6	6	-
D3CG102	460-3-60	8.33	69	1.3	-	3.4	4.8	-	-	24.8	26.2	-	30	-	10	10	-
	575-3-60	7.05	55	1.3	-	2.7	3.9	-	-	21.2	22.4	-	25	-	10	10	-
D2CE120	208/230-3-60	16.70	150	2.3	-	7.5	10.6	-	-	49.6	52.7	-	60	-	6	6	-
D3CG120	460-3-60	9.62	73	1.3	-	3.4	4.8	-	-	27.6	29.0	-	35	-	10	10	-
	575-3-60	8.33	59	1.3	-	2.7	3.9	-	-	24.1	25.3	-	30	-	10	10	-
D2CE150	208/230-3-60	28.20/17.30	110/150	3.5	-	-	10.6	15.1	-	-	70.2	74.7	90/100	-	-	3	4*
D3CG150	460-3-60	14.10/9.62	54/73	2.5	-	-	4.8	7.5	-	-	37.0	39.7	50	-	-	8	8
	575-3-60	11.50/8.33	44/59	2.5	-	-	3.9	5.9	-	-	31.7	33.7	40/45	-	-	8	8

NOTES: 1. Dual numbers shown as "28.20/17.30" amps indicates compressor #1 / #2 respectively.
2. Dual element, time delay type. Amps shown as "45/50" indicates rating for LO HP / HI HP respectively. Maximum HACR breaker of the same AMP size is applicable, except 575 volt units.
3. Based on 60°C copper conductors, unless otherwise indicated.

*Based on 75 °C copper conductors.

VOLTAGE LIMITATIONS*	POWER SUPPLY	VOLTAGE	
		MIN.	MAX.
	208/230-3-60	187	253
	460-3-60	414	506
	575-3-60	518	630

*Utilization Range "A" in accordance with ARI Standard 110.