NOTE TO BIDDER: Use preferably BLACK ink for completing this Bid form.

BID FORM

To: The City of Key West

Address: 3140 Flagler Ave, Key West, Florida 33040

Project Title: Electrical Enclosures & Fuel Station

City of Key West Project No.: **ITB 13-011**

Bidder's contact for additional information on this Bid:

Company Name: E.L.C.I. CONSTRUCTION GROUP, INC.

Contact Name: FORTUNA M. BICHACHI / MOISES B. BICHACHI

Telephone: 305-891-7990

BIDDER'S DECLARATION AND UNDERSTANDING

The undersigned, hereinafter called the Bidder, declares that the only persons or parties interested in this Bid are those named herein, that this Bid is, in all respects, fair and without fraud, that it is made without collusion with any official of the Owner, and that the Bid is made without any connection or collusion with any person submitting another Bid on this Contract.

The Bidder further declares that he has carefully examined the Contract Documents for the construction of the project, that he has personally inspected the site, that he has satisfied himself as to the quantities involved, including materials and equipment, and conditions of work involved, including the fact that the description of the quantities of work and materials, as included herein, is brief and is intended only to indicate the general nature of the Work and to identify the said quantities with the detailed requirements of the Contract Documents, and that this Bid is made according to the provisions and under the terms of the Contract Documents, which Documents are hereby made a part of this Bid.

The Bidder further agrees, as evidenced by signing the Bid, that if awarded a Contract, the Florida Trench Safety Act and applicable trench safety standards will be complied with.

CONTRACT EXECUTION AND BONDS

The Bidder agrees that if this Bid is accepted, he will, within 10 days, not including Sundays and legal holidays, after Notice of Award, sign the Contract in the form annexed hereto, and will at that time, deliver to the Owner examples of the Performance Bond and Payment Bond required herein, and evidence of holding required licenses and certificates, and will, to the extent of his Bid, furnish all machinery, tools, apparatus, and other means of construction and do the Work and furnish all the materials necessary to complete all work as specified or indicated in the Contract Documents.

CERTIFICATES OF INSURANCE

Bidder agrees to furnish the Owner, before commencing the Work under this Contract, the certificates of insurance as specified in these Documents.

START OF CONSTRUCTION AND CONTRACT COMPLETION TIMES

The Bidder agrees to begin work within 10 calendar days after the date of the Notice to Proceed and to achieve Substantial Completion within 160 calendar days from the date when the Contract Times commence to run as provided in paragraph 2.03.A of the General Conditions, and Work will be completed and ready for final payment and acceptance in accordance with paragraph 14.07 of the General Conditions within 180 calendar days from the date when the Contract Times commence to run.

LIQUIDATED DAMAGES

In the event the Bidder is awarded the Contract, Owner and Bidder recognize that time is of the essence of this Agreement and that Owner will suffer financial loss if the Work is not completed within the times specified in paragraph Start of Construction and Contract Completion Times above, plus any extensions thereof allowed in accordance with Article 12 of the General Conditions. Owner and Bidder also recognize the delays, expense, and difficulties involved in proving in a legal or other dispute resolution proceeding the actual loss suffered by Owner if the Work is not completed on time. Accordingly, instead of requiring any such proof, Owner and Bidder agree that as liquidated damages for delay (but not as a penalty) Bidder shall pay Owner **$500** per day for each day that expires after the time specified for substantial completion.

After Substantial Completion, if Bidder neglects, refuses, or fails to complete the remaining Work within the Contract Times or any Owner-granted extension thereof, Bidder shall pay Owner **$200** for each day that expires after the time specified in paragraph Start of Construction and Contract Completion Times, above for completion and readiness for final payment. Liquidated damages shall run concurrent.

Owner will recover such liquidated damages by deducting the amount owed from the final payment or any retainage held by Owner.

ADDENDA

The Bidder hereby acknowledges that he has received Addenda Nos. 01, 02, ____, ____, ____, (Bidder shall insert No. of each Addendum received) and agrees that all addenda issued are hereby made part of the Contract Documents, and the Bidder further agrees that his Bid(s) includes all impacts resulting from said addenda.

SALES AND USE TAXES

The Bidder agrees that all federal, state, and local sales and use taxes are included in the stated Bid Prices for the Work. Cash allowances DO NOT include any sales and use tax. Equipment allowance includes taxes as shown in Equipment Suppliers' Bid.

PUBLIC ENTITY CRIMES

"A person or affiliate who has been placed on the convicted vendor list following a conviction for a public entity crime may not submit a bid on a contract to provide any goods or services to a public entity, may not submit a bid on a contract with a public entity for the construction or repair of a public building or public work, may not submit bids on leases of real property to a public entity, may not be awarded or perform work as a contractor, supplier, subcontractor, or consultant under a contract with any public entity and may not transact business with any public entity in excess of the threshold amount provided in Section 287.017, for CATEGORY TWO for a period of 36 months from the date of being placed on the convicted vendor list."

COMBINED UNIT PRICE AND LUMP SUM WORK

The Bidder further proposes to accept as full payment for the Work proposed herein the amounts computed under the provisions of the Contract Documents. For unit price bid items, the estimate of quantities of work to be done is tabulated in the Proposal and, although stated with as much accuracy as possible, is approximate only and is assumed solely for the basis of calculation upon which the award of Contract shall be made. For lump sum bid items, it is expressly understood that the amounts are independent of the exact quantities involved. The Bidder agrees that the amounts for both unit price and lump sum work represent a true measure of labor and materials required to perform the Work, including all allowances for inspection, testing, overhead and profit for each type of work called for in these Contract Documents. The amounts shall be shown in both words and figures. In case of discrepancy, the amount shown in words shall govern.

Bid Form ITB 13-011

City of Key West Project: **OM1301**

Base Bid **:**

SW#1 through SW#3 Enclosures (inclusive)	(Lump Sum)	1,275,657.00	(1)
Accident Prevention Plan (APP) Management	(Lump Sum)	98,564.00	(2)
Quality Control (QC) Program Management	(Lump Sum)	89,900.00	(3)
Construction Administration (CA) Program Management	(Lump Sum)	191,312.00	(4)

Total Bid: $1,655,433.00

(1)+(2)+(3)+(4)

One Million Six Hundred Fifty Five Thousand Four Hundred Thirty Three **Dollars and** Zero **Cents**

Total Bid Written in Words has precedence (Basis of Award)

All Bid Items Below are "Alternate Bid Items" **:**

Alternate: SW#4 Enclosure (includes all site work within 100 feet of SW#4 Location)	(Lump Sum)	570,363.00	(5)

Alternate Bid Items for SW#1 - SW#4

(Option # corresponds to Notes on Sheet A601 of Drawing Set)

	Quan.	Meas.	Unit Cost	Ext.	
Alternate: Option 1. Stainless Steel Watertight Man-door 3^0	12	ea.	12,090.00	145,080.00	(6)
Alternate: Option 2. Stainless Steel OH Coil Roll-up Door 12'0"	4	ea.	12,734.00	50,936.00	(7)
Alternate: Option 3. Aluminum Flood Panel for 3^0 Man-door	12	ea.	1,976.00	23,712.00	(8)
Alternate: Option 4. Aluminum Flood Panel for 12'0" Roll-up Door	4	ea.	6,175.00	24,700.00	(9)
Alternate: Option 5. Stainless Steel OH Coil Roll-up Door 10'0"	1	ea.	12,160.00	12,160.00	(10)
Alternate: Option 6. Aluminum Flood Panel for 10'0" Roll-up Door	1	ea.	5,187.00	5,187.00	(11)

Alternate Bid Items: Fueling Station

Alternate: Fueling Station: Site Work, Electrical, Fence, Concrete, Std. Tank	(Lump Sum)	527,768.00	(12)
Alternate: Stainless Steel Option for 1000 Gal. Fuel Tank	(Lump Sum)	85,064.00	(13)

THE CITY OF KEY WEST
3140 Flagler St,
Key West, FL 33040

ADDENDUM #1
Electrical Enclosures & Fuel Station
Invitation to Bid: 13-011
21 February 2013

This Addendum is issued as supplemental information to the bid package for clarification of certain matters of both a general and a technical nature. The referenced bid package is amended in accordance with the following items:

- Attached to this coversheet is Addendum #1, dated 21 February which provides an estimated construction budget, makes specific minor corrections to information presented in the bid documents, and replaces the "Invitation to Bid" (00 11 13) and the "Instructions to Bidders" (00 21 13) with the modified versions included in the Addendum.

All Bidders shall acknowledge receipt and acceptance of this Addendum No. 1 by acknowledging Addendum No. 1 in their proposal or by submitting the signed Addendum No. 1 with the bid package. Bids submitted without acknowledgement or without this Addendum may be considered non-responsive.

Signature

E.L.C.I. Construction Group, Inc
Name Of Business

THE CITY OF KEY WEST
3140 Flagler St,
Key West, FL 33040

ADDENDUM #2
Electrical Enclosures & Fuel Station
Invitation to Bid: 13-011
6 March 2013

This Addendum is issued as supplemental information to the bid package for clarification of certain matters of both a general and a technical nature. The referenced bid package is amended in accordance with the following items:

- Attached to this coversheet is Addendum #2, dated 6 March 2013 which makes specific minor corrections to information presented in the bid documents, replaces "Fuel Station" drawings, "Switchgear Enclosures" drawings, and specific pages of the "NAVFAC Specifications" with the modified versions included in the Addendum and also includes the sign-in sheet for the mandatory pre-bid site visit.

All Bidders shall acknowledge receipt and acceptance of this Addendum No. 2 by acknowledging Addendum No. 2 in their proposal or by submitting the signed Addendum No. 1 with the bid package. Bids submitted without acknowledgement or without this Addendum may be considered non-responsive.

W B Prichard
Signature

ELCI CONSTRUCTION Group, Inc
Name Of Business

SUBCONTRACTORS

The Bidder further proposes that the following subcontracting firms or businesses will be awarded subcontracts for the following portions of the Work in the event that the Bidder is awarded the Contract:

TEM ENVIROMENTAL & MECHANICAL SERVICES
Name

31425 SW 202 St. | Homestead | FL. | 33030
Street | City | State | Zip

FLORIDA KEYS ELECTRIC
Name

| Key West | FL. | 33040
Street | City | State | Zip

Bella Construction
Name

111 US HIGHWAY 1 # 110 | Key West | FL | 33040
Street | City | State | Zip

GLASGOW Equipment Service
Name

P.O. Box 10087 | Riviera Beach | FL. | 33419
Street | City | State | Zip

Surety

CAPITOL INDEMNITY CORP whose address is

1600 ASPEN CMNS #400 | MIDDLETON | WI | 53562
Street | City | State | Zip

Bidder

The name of the Bidder submitting this Bid is E.L.C.I. Construction Group, Inc. doing business at

626 N.E. 124 St.	N. Miami	FL.	33161
Street	City	State	Zip

which is the address to which all communications concerned with this Bid and with the Contract shall be sent.

The names of the principal officers of the corporation submitting this Bid, or of the partnership, or of all persons interested in this Bid as principals are as follows:

Fortuna M. Bichachi Pres.

Moises B. Bichachi V.P

If Sole Proprietor or Partnership

IN WITNESS hereto the undersigned has set his (its) hand this ___ day of _____ 20___.

Signature of Bidder

Title

If Corporation

IN WITNESS WHEREOF the undersigned corporation has caused this instrument to be executed and its seal affixed by its duly authorized officers this 11 day of MARCH 2013

(SEAL)

E.L.C.I. CONSTRUCTION GROUP, INC
Name of Corporation

By: _____

Title: PRESIDENT

Attest: _____
Secretary

END OF SECTION

FLORIDA BID BOND

BOND NO. N/A

AMOUNT: $Five Percent (5%) of Bid Amount

KNOW ALL MEN BY THESE PRESENTS, that E.L.C.I. CONSTRUCTION GROUP, INC.

hereinafter called the Contractor (Principal), and CAPITOL INDEMNITY CORPORATION

a corporation duly organized and existing under and by virtue of the laws of the State of Florida, hereinafter called the Surety, and authorized to transact business within the State of Florida, as Surety, are held and firmly bound unto The City of Key West as Owner

(Obligee), in the sum of: Five Percent of Bid Proposal Submitted ----------

---------- DOLLARS ($ 5% ----------), for the payment for which we bind ourselves, our heirs, executors, administrators, successors, and assigns, jointly and severally, firmly by these presents.

THE CONDITION OF THIS BOND IS SUCH THAT:

WHEREAS, the Principal is herewith submitting his or its Bid Proposal for **ITB 13-011 SWITCHGEAR ENCLOSURES & FUEL STATION.**

WHEREAS, the Principal contemplates submitting or has submitted a bid to the Obligee for the furnishing of all labor, materials (except those to be specifically furnished by the Owner), equipment, machinery, tools, apparatus, means of transportation for, and the performance of the work covered in the Proposal and the detailed Drawings and Specifications, entitled:

SWITCHGEAR ENCLOSURES & FUEL STATION - ITB NO. 13-011

WHEREAS, it was a condition precedent to the submission of said bid that a cashier's check, certified check, or bid bond in the amount of 5 percent of the base bid be submitted with said bid as a guarantee that the Bidder would, if awarded the Contract, enter into a written Contract with the Owner for the performance of said Contract, within 10 working days after written notice having been given of the award of the Contract.

NOW, THEREFORE, the conditions of this obligation are such that if the Principal within 14 consecutive calendar days after written notice of such acceptance, enters into a written Contract with the Obligee and furnishes the Performance and Payment Bonds, each in an amount equal to 100 percent of the awarded base bid, satisfactory to the Owner, then this obligation shall be void; otherwise the sum herein stated shall be due and payable to the Obligee and the Surety herein agrees to pay said sum immediately upon demand of the Obligee in good and lawful money of the United States of America, as liquidated damages for failure thereof of said Principal.

Signed and sealed this 12 day of March, 2013

E.L.C.I. CONSTRUCTION GROUP, INC.

Principal

By: _____

CAPITOL INDEMNITY CORPORATION

Surety

By: _____

Attorney-In-Fact - Charles J. Nielson

END OF SECTION

CAPITOL INDEMNITY CORPORATION
POWER OF ATTORNEY

60058912

KNOW ALL MEN BY THESE PRESENTS, That the **CAPITOL INDEMNITY CORPORATION**, a corporation of the State of Wisconsin, having its principal offices in the City of Middleton, Wisconsin, does make, constitute and appoint

WARREN M ALTER; DAVID R HOOVER; CHARLES J NIELSON; CHARLES D NIELSON; JOSEPH P NIELSON
PATTY SMALLEY; VICKI TRUESDALE; NICOLE M WILLIAMS

its true and lawful Attorney(s)-in-fact, to make, execute, seal and deliver for and on its behalf, as surety, and as its act and deed, any and all bonds, undertakings and contracts of suretyship, provided that no bond or undertaking or contract of suretyship executed under this authority shall exceed in amount the sum of

ALL WRITTEN INSTRUMENTS IN AN AMOUNT NOT TO EXCEED: $2,500,000.00

This Power of Attorney is granted and is signed and sealed by facsimile under and by the authority of the following Resolution adopted by the Board of Directors of **CAPITOL INDEMNITY CORPORATION** at a meeting duly called and held on the 15th day of May, 2002.

"**RESOLVED**, that the President, Executive Vice President, Vice President, Secretary or Treasurer, acting individually or otherwise, be and they hereby are granted the power and authorization to appoint by a Power of Attorney for the purposes only of executing and attesting bonds and undertakings, and other writings obligatory in the nature thereof, one or more resident vice-presidents, assistant secretaries and attorney(s)-in-fact, each appointee to have the powers and duties usual to such offices to the business of this company; the signature of such officers and seal of the Company may be affixed to any such power of attorney or to any certificate relating thereto by facsimile, and any such power of attorney or certificate bearing such facsimile signatures or facsimile seal shall be valid and binding upon the Company, and any such power so executed and certified by facsimile signatures and facsimile seal shall be valid and binding upon the Company in the future with respect to any bond or undertaking or other writing obligatory in the nature thereof to which it is attached. Any such appointment may be revoked, for cause, or without cause, by any of said officers, at any time."

IN WITNESS WHEREOF, the **CAPITOL INDEMNITY CORPORATION** has caused these presents to be signed by its officer undersigned and its corporate seal to be hereto affixed duly attested, this 1st day of January, 2007.

Attest:

David F. Pauly
Chairman & CEO

CORPORATE SEAL

CAPITOL INDEMNITY CORPORATION

James J. McIntyre
President & COO

STATE OF WISCONSIN }
COUNTY OF DANE } S.S.:

On the 1st day of January, 2007 before me personally came James J. McIntyre, to me known, who being by me duly sworn, did depose and say: that he resides in the County of Dane, State of Wisconsin; that he is President of **CAPITOL INDEMNITY CORPORATION**, the corporation described in and which executed the above instrument; that he knows the seal of the said corporation; that the seal affixed to said instrument is such corporate seal; that it was so affixed by order of the Board of Directors of said corporation and that he signed his name thereto by like order.

DANIEL W. KRUEGER NOTARY PUBLIC

Daniel W. Krueger
Notary Public, Dane Co., WI
My Commission Is Permanent

STATE OF WISCONSIN }
COUNTY OF DANE } S.S.:

CERTIFICATE

I, the undersigned, duly elected to the office stated below, now the incumbent in **CAPITOL INDEMNITY CORPORATION**, a Wisconsin Corporation, authorized to make this certificate, **DO HEREBY CERTIFY** that the foregoing attached Power of Attorney remains in full force and has not been revoked; and furthermore, that the Resolution of the Board of Directors, set forth in the Power of Attorney is now in force.

Signed and sealed at the City of Middleton, State of Wisconsin this 12 day of March, 2013.

CAPITOL INDEMNITY CORPORATION CORPORATE SEAL WISCONSIN

Alan S. Ogilvie
Secretary

THIS DOCUMENT IS NOT VALID UNLESS PRINTED ON GRAY SHADED BACKGROUND WITH A RED SERIAL NUMBER IN THE UPPER RIGHT HAND CORNER. IF YOU HAVE ANY QUESTIONS CONCERNING THE AUTHENTICITY OF THIS DOCUMENT CALL 800-475-4450.

CIC-POA (8-07)

ANTI-KICKBACK AFFIDAVIT

STATE OF FLORIDA)
: SS
COUNTY OF MONROE)

I, the undersigned hereby duly sworn, depose and say that no portion of the sum herein bid will be paid to any employees of the City of Key West as a commission, kickback, reward or gift, directly or indirectly by me or any member of my firm or by an officer of the corporation.

By: _____

Sworn and subscribed before me this
12 day of March, 2013

_____
NOTARY PUBLIC, State of Florida
at Large

VIVIAN MONTENEGRO
Notary Public - State of Florida
My Comm. Expires Oct 10, 2016
Commission # EE 842403

My Commission Expires: _____

END OF SECTION

SWORN STATEMENT UNDER SECTION 287.133(3)(A)
FLORIDA STATUTES, ON PUBLIC ENTITY CRIMES

THIS FORM MUST BE SIGNED IN THE PRESENCE OF A NOTARY PUBLIC OR OTHER OFFICER AUTHORIZED TO ADMINISTER OATHS.

1. This sworn statement is submitted with Bid or Proposal for ELECTRICAL ENCLOSURES + FUEL STATION

2. This sworn statement is submitted by E.L.C.I. CONSTRUCTION GROUP, INC
(name of entity submitting sworn statement)

whose business address is 626 N.E. 12th St.

_____ and (if applicable) its Federal Employer

Identification Number (FEIN) is 65-1134265

(If the entity has no FEIN, include the Social Security Number of the individual signing this

sworn statement _____

3. My name is FORTUNA M. BICHACHI
(please print name of individual signing)

and my relationship to the entity named above is PRESIDENT / DIRECTOR

4. I understand that a "public entity crime" as defined in Paragraph 287.133(1)(g), Florida Statutes, means a violation of any state or federal law by a person with respect to and directly related to the transaction of business with any public entity or with an agency or political subdivision of any other state or with the United States, including but not limited to, any bid or contract for goods or services to be provided to any public or an agency or political subdivision of any other state or of the United States and involving antitrust, fraud, theft, bribery, collusion, racketeering, conspiracy, material misrepresentation.

5. I understand that "convicted" or "conviction" as defined in Paragraph 287.133(1)(b), Florida Statutes, means a finding of guilt or a conviction of a public entity crime, with or without an adjudication guilt, in any federal or state trial court of record relating to charges brought by indictment information after July 1, 1989, as a result of a jury verdict, nonjury trial, or entry of a plea of guilty or nolo contendere.

6. I understand that an "affiliate" as defined in Paragraph 287.133(1)(a), Florida Statutes, means

   1. A predecessor or successor of a person convicted of a public entity crime; or

   2. An entity under the control of any natural person who is active in the management of the entity and who has been convicted of a public entity crime. The term "affiliate" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in the management of an affiliate. The ownership by one person of shares constituting controlling interest in another person, or a pooling of equipment or income among persons when not for fair market value under an arm's length agreement, shall be a prima facie case that one person controls another person. A person who knowingly enters into a joint venture with a person who has been convicted of a public entity crime in Florida during the preceding 36 months shall be considered an affiliate.

7. I understand that a "person" as defined in Paragraph 287.133(1)(8), Florida Statutes, means any natural person or entity organized under the laws of any state or of the United States with the legal power to enter into a binding contract and which bids or applies to bid on contracts for the provision of goods or services let by a public entity, or which otherwise transacts or applies to transact business with public entity. The term "person" includes those officers, directors, executives, partners, shareholders, employees, members, and agents who are active in management of an entity.

8. Based on information and belief, the statement which I have marked below is true in relation to the entity submitting this sworn statement. (Please indicate which statement applies).

✓ Neither the entity submitting this sworn statement, nor any officers, directors, executives, partners, shareholders, employees, members, or agents who are active in management of the entity, nor any affiliate of the entity have been charged with and convicted of a public entity crime subsequent to July 1, 1989, AND (Please indicate which additional statement applies.)

_____ There has been a proceeding concerning the conviction before a hearing of the State of Florida, Division of Administrative Hearings. The final order entered by the hearing officer did not place the person or affiliate on the convicted vendor list. (Please attach a copy of the final order.)

_____ The person or affiliate was placed on the convicted vendor list. There has been a subsequent proceeding before a hearing officer of the State of Florida, Division of Administrative Hearings. The final order entered by the hearing officer determined that it was in the public interest to remove the person or affiliate from the convicted vendor list. (Please attach a copy of the final order.)

_____ The person or affiliate has not been put on the convicted vendor list. (Please describe any action taken by or pending with the Department of General Services.)

(signature)

3/12/13
(date)

STATE OF Florida

COUNTY OF Miami Dade

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

Fortuna Bichachi who, after first being sworn by me, affixed his/her
(name of individual signing)

signature in the space provided above on this 12 of March, 2013.

My commission expires:

VIVIAN MONTENEGRO
Notary Public - State of Florida
My Comm. Expires Oct 10, 2016
Commission # EE 842403

Vivian Montenegro
NOTARY PUBLIC

CITY OF KEY WEST INDEMNIFICATION FORM

To the fullest extent permitted by law, the CONTRACTOR expressly agrees to indemnify and hold harmless the City of Key West, their officers, directors, agents and employees *(herein called the "indemnitees") from liabilities, damages, losses and costs, including but not limited to, reasonable attorney's fees and court costs, such legal expenses to include costs incurred in establishing the indemnification and other rights agreed to in this Paragraph, to persons or property, to the extent caused by the negligence, recklessness, or intentional wrongful misconduct of the CONTRACTOR, its Subcontractors or persons employed or utilized by them in the performance of the Contract. Claims by indemnitees for indemnification shall be limited to the amount of CONTRACTOR's insurance or $1 million per occurrence, whichever is greater. The parties acknowledge that the amount of the indemnity required hereunder bears a reasonable commercial relationship to the Contract and it is part of the project specifications or the bid documents, if any.

The indemnification obligations under the Contract shall not be restricted in any way by any limitation on the amount or type of damages, compensation, or benefits payable by or for the CONTRACTOR under Workers' Compensation acts, disability benefits acts, or other employee benefits acts, and shall extend to and include any actions brought by or in the name of any employee of the CONTRACTOR or of any third party to whom CONTRACTOR may subcontract a part or all of the Work. This indemnification shall continue beyond the date of completion of the work.

CONTRACTOR: E.L.C.I. CONSTRUCTION GROUP, INC SEAL:

626 N.E. 124 St. N. MIAMI FL. 33161
Address

Signature

FORTUNA M. BICHACHI
Print Name

President
Title

DATE: 3-13-13

N/A

LOCAL VENDOR CERTIFICATION PURSUANT TO CKW ORDINANCE 09-22 SECTION 2-798

The undersigned, as a duly authorized representative of the vendor listed herein, certifies to the best of his/her knowledge and belief, that the vendor meets the definition of a "Local Business." For purposes of this section, "local business" shall mean a business which:

a. Principle address as registered with the FL Department of State located within 30 miles of the boundaries of the city, listed with the chief licensing official as having a business tax receipt with its principle address within 30 miles of the boundaries of the city for at least one year immediately prior to the issuance of the solicitation.

b. Maintains a workforce of at least 50 percent of its employees from the city or within 30 miles of its boundaries.

c. Having paid all current license taxes and any other fees due the city at least 24 hours prior to the publication of the call for bids or request for proposals.

- Not a local vendor pursuant to Ordinance 09-22 Section 2-798
- Qualifies as a local vendor pursuant to Ordinance 09-22 Section 2-798

If you qualify, please complete the following in support of the self certification & submit copies of your County and City business licenses. Failure to provide the information requested will result in denial of certification as a local business.

Business Name

Phone:

Current Local Address:
(P.O Box numbers may not be used to establish status)

Fax:

Length of time at this address

_____ _____
Signature of Authorized Representative Date

STATE OF_____
COUNTY OF_____

The foregoing instrument was acknowledged before me this _____day of _____, 20___.
By_____, of_____
(Name of officer or agent, title of officer or agent) Name of corporation acknowledging)
or has produced_____as identification
(type of identification)

_____
Signature of Notary

_____
Print, Type or Stamp Name of Notary

Return Completed form with
Supporting documents to:
City of Key West Purchasing

_____
Title or Rank

DISCLOSURE OF LOBBYING ACTIVITIES

Complete this form to disclose lobbying activities pursuant to 31 U.S.C. 1352
(See reverse for public burden disclosure.)

1. **Type of Federal Action:** [A] a. contract b. grant c. cooperative agreement d. loan e. loan guarantee f. loan insurance	2. **Status of Federal Action:** [B] a. bid/offer/application b. initial award c. post-award	3. **Report Type:** [A] a. initial filing b. material change **For Material Change Only:** year_____ quarter_____ date of last report_____

4. **Name and Address of Reporting Entity:** [X] Prime [ ] Subawardee Tier _____, *if known:* **Congressional District,** *if known:*	5. **If Reporting Entity in No. 4 is Subawardee, Enter Name and Address of Prime:** **Congressional District,** *if known:*
6. **Federal Department/Agency:** UNKNOWN	7. **Federal Program Name/Description:** UNKNOWN CFDA Number, *if applicable:* _____
8. **Federal Action Number,** *if known:*	9. **Award Amount,** *if known:* **$**

10. a. Name and Address of Lobbying Entity *(if individual, last name, first name, MI):*	b. Individuals Performing Services *(including address if different from No. 10a) (last name, first name, MI):*
N/A	E.L.C.I. CONSTRUCTION GROUP, INC. 626 N.E. 124 St. N. MIAMI FL. 33161
(attach Continuation Sheet(s) SF-LLLA, if necessary)	

11. **Information requested through this form is authorized by title 31 U.S.C. section 1352. This disclosure of lobbying activities is a material representation of fact upon which reliance was placed by the tier above when this transaction was made or entered into. This disclosure is required pursuant to 31 U.S.C. 1352. This information will be reported to Congress semi-annually and will be available for public inspection. Any person who fails to file the required disclosure shall be subject to a civil penalty of not less than $10,000 and not more than $100,000 for each such failure.**	**Signature:** **Print Name:** FORTUNA M. BICHACHI **Title:** PRESIDENT / DIRECTOR **Telephone No.:** 305-891-7990 **Date:** 2/11/13
Federal Use Only:	Authorized for Local Reproduction Standard Form – LLL (Rev 7 – 97)

FORM DEP 55-221 (01/01)

INSTRUCTIONS FOR COMPLETION OF SF-LLL, DISCLOSURE OF LOBBYING ACTIVITIES

This disclosure form shall be completed by the reporting entity, whether subawardee or prime Federal recipient, at the initiation or receipt of a covered Federal action, or a material change to a previous filing, pursuant to title 31 U.S.C. section 1352. The filing of a form is required for each payment or agreement to make payment to any lobbying entity for influencing or attempting to influence an officer or employee of any agency, a Member of Congress, an officer or employee of Congress, or an employee of a Member of Congress in connection with a covered Federal action. Complete all items that apply for both the initial filing and material change report. Refer to the implementing guidance published by the Office of Management and Budget for additional information.

1. **Identify the type of covered Federal action for which lobbying activity is and/or has been secured to influence the outcome of a covered Federal action.**

2. **Identify the status of the covered Federal action.**

3. **Identify the appropriate classification of this report. If this is a follow up report caused by a material change to the information previously reported, enter the year and quarter in which the change occurred. Enter the date of the last previously submitted report by the reporting entity for this covered Federal action.**

4. **Enter the full name, address, city, state and zip code of the reporting entity. Include Congressional District, if known. Check the appropriate classification of the reporting entity that designates if it is or expects to be, a prime or subaward recipient. Identify the tier of the subawardee, e.g., the first subawardee of the prime is the 1st tier. Subawards include but are not limited to subcontracts, subgrants and contract awards under grants.**

5. **If the organization filing the report in item 4 checks "Subawardee", then enter the full name, address, city, state and zip code of the prime Federal recipient. Include Congressional District, if known.**

6. **Enter the name of the Federal agency making the award or loan commitment. Include at least one organizational level below agency name, if known. For example, Department of Transportation, United States Coast Guard.**

7. **Enter the Federal program name or description for the covered Federal action (item 1). If known, enter the full Catalog of Federal Domestic Assistance (CFDA) number for grants, cooperative agreements, loans, and loan commitments.**

8. **Enter the most appropriate Federal identifying number available for the Federal action identified in item 1 (e.g., Request for Proposal (RFP) number; Invitation for Bid (IFB) number; grant announcement number; the contract, grant, or loan award number; the application/proposal control number assigned by the Federal agency). Include prefixes, e.g., "RFP-DE-90-001."**

9. **For a covered Federal action where there has been an award or loan commitment by the Federal agency, enter the Federal amount of the award/loan commitment for the prime entity identified in item 4 or 5.**

10. **(a) Enter the full name, address, city, state and zip code of the lobbying entity engaged by the reporting entity identified in item 4 to influence the covered Federal action.**

    (b) Enter the full names of the individual(s) performing services, and include full address if different from 10 (a). Enter Last Name, First Name, and Middle Initial (MI).

11. **The certifying official shall sign and date the form, print his/her name, title and telephone number.**

According to the Paperwork Reduction Act, as amended, no persons are required to respond to a collection of information unless it displays a valid OMB Control Number. The valid OMB control number for this information collection is OMB No. 0348-0046. Public reporting burden for this collection of information is estimated to average 30 minutes per response, including time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding the burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to the Office of Management and Budget, Paperwork Reduction Project (0348-0046), Washington, D.C. 20503.

Form DEP 55-221 (01/01)

NON-COLLUSION DECLARATION AND COMPLIANCE WITH 49 CFR §29.

ITEM/SEGMENT NO.:_____
F.A.P. NO.:
PARCEL NO.:
COUNTY OF: ELECTRICAL ENCLOSURE #
BID LETTING OF: FUEL STATION 13-011

I, FORTUNA M. BICHACHI _____, hereby
(NAME)
declare that I am PRESIDENT/DIRECTOR of E.L.C.I. CONSTRUCTION GROUP, INC.
(TITLE) (FIRM)
Of 626 N.E. 124 St. N. MIAMI FL. 33161
(CITY AND STATE)
and that I am the person responsible within my firm for the final decision as to the price(s) and amount of this Bid on this Project.

I further declare that:

1. The prices(s) and amount of this bid have been arrived at independently, without consultation, communication or agreement, for the purpose of restricting competition with any other contractor, bidder or potential bidder.

2. Neither the price(s) nor the amount of this bid have been disclosed to any other firm or person who is a bidder or potential bidder on this project, and will not be so disclosed prior to the bid opening.

3. No attempt has been made or will be made to solicit, cause or induce any other firm or person to refrain from bidding on this project, or to submit a bid higher than the bid of this firm, or any intentionally high or non-competitive bid or other form of complementary bid.

4. The bid of my firm is made in good faith and not pursuant to any agreement or discussion with, or inducement from, any firm or person to submit a complementary bid.

5. My firm has not offered or entered into a subcontract or agreement regarding the purchase of materials or services from any firm or person, or offered, promised or paid cash or anything of value to any firm or person, whether in connection with this or any other project in consideration for an agreement or promise by any firm or person to refrain from bidding or to submit a complementary bid on this project.

6. My firm has not accepted or been promised any subcontract or agreement regarding the sale of materials or services to any firm or person, and has not been promised or paid cash or anything of value by any firm or person, whether in connection with this or any other project, in consideration for my firm's submitting a complementary bid, or agreeing to do so, on this project.

7. I have made a diligent inquiry of all members, officers, employees, and agents of my firm with responsibilities relating to the preparation, approval or submission of my firm's bid on this project and have been advised by each of them that he or she has not participated in any communication, consultation, discussion, agreement, collusion, act or other conduct inconsistent with any of the statements and representations made in this Declaration.

8. As required by Section 337.165, Florida Statutes, the firm has fully informed the City of Key West in writing of all convictions of the firm, its affiliates (as defined in Section 337.165(l)(a),

Florida Statutes), and all directors, officers, and employees of the firm and its affiliates for violation of state or federal antitrust laws with respect to a public contract or for violation of any state or federal law involving fraud, bribery, collusion, conspiracy or material misrepresentation with respect to a public contract. This includes disclosure of the names of current employees of the firm or affiliates who were convicted of contract crimes while in the employ of another company.

9. I certify that, except as noted below, neither my firm nor any person associated therewith in the capacity of owner, partner, director, officer, principal, investigator, project director, manager, auditor, and/or position involving the administration of Federal funds:

(a) is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from covered transactions, as defined in 49 CFR §29.110(a), by any Federal department or agency;

(b) has within a three-year period preceding this certification been convicted of or had a civil judgment rendered against him or her for: commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a Federal, State or local government transaction or public contract; violation of Federal or State antitrust statutes; or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements or receiving stolen property;

(c) is presently indicted for or otherwise criminally or civilly charged by a Federal, State or local governmental entity with commission of any of the offenses enumerated in paragraph 9(b) of this certification; and

(d) has within a three-year period preceding this certification had one or more Federal, State or local government public transactions terminated for cause or default..

10. I(We), certify that I(We), shall not knowingly enter into any transaction with any subcontractor, material supplier, or vendor who is debarred, suspended, declared ineligible, or voluntarily excluded from participation in this contract by any Federal Agency unless authorized by the Department.

Where I am unable to declare or certify as to any of the statements contained in the above stated paragraphs numbered (1) through (10), I have provided an explanation in the "Exceptions" portion below or by attached separate sheet.

EXCEPTIONS:

(Any exception listed above will not necessarily result in denial of award, but will be considered in determining bidder responsibility. For any exception noted, indicate to whom it applies, initiating agency and dates of agency action.

Providing false information may result in criminal prosecution and/or administrative sanctions.)

I declare under penalty of perjury that the foregoing is true and correct.

CONTRACTOR: (Seal)
E.L.C.I. CONSTRUCTION GROUP, INC.

BY: FORTUNA M. BICHACHI WITNESS: [signature]
NAME AND TITLE PRINTED

BY: [signature] WITNESS: [signature]
SIGNATURE

Executed on this 11 day of MARCH, 2013

FAILURE TO FULLY COMPLETE AND EXECUTE THIS DOCUMENT MAY RESULT IN THE BID BEING DECLARED NONRESPONSIVE

FLORIDA TRENCH SAFETY ACT COMPLIANCE
Trench Excavation Safety System and Shoring

CERTIFICATION

All excavation, trenching, and related sheeting, bracing, etc. on this project shall conform to the requirements of the Florida Trench Safety Act (90-96, CS/SB 2626), which incorporates by reference, OSHA's excavation safety standards, 29 CFR 1926.650 Subpart P including all subsequent revisions or updates to the these standards.

By submission of this bid and subsequent execution of this Contract, the undersigned certifies compliance with the above mentioned standards and further stipulates that all costs associated with this compliance are detailed below as well as included in their lump sum bid amount.

Summary of Costs:

Trench Safety Measure	Units	Quantity	Unit Cost	Extended Cost
A. TRENCH BOX	LF	100	$40.00/LF	$4000.00
B.				

Signature

3-12-13
Date

STATE OF Florida

COUNTY OF Miami Dade

PERSONALLY APPEARED BEFORE ME, the undersigned authority,

Fortuna Bidacki who, after first being sworn by me affixed his /her signature in the space,

provided above on the 12 day of March, 2013.

Vivian Montenegro
Notary Public

VIVIAN MONTENEGRO
Notary Public - State of Florida
My Comm. Expires Oct 10, 2016
Commission # EE 842403

(Seal)

MY COMMISSION EXPIRES:

SUSPENSION AND DEBARMENT CERTIFICATION

CERTIFICATION REGARDING DEBARMENTS, SUSPENSION, INELIGIBILITY AND VOLUNTARY EXCLUSION-LOWER TIER FEDERALLY FUNDED TRANSACTIONS

1. The undersigned hereby certifies that neither it nor its principals is presently debarred, suspended, proposed for debarment, declared ineligible, or voluntarily excluded from participation in this transaction by any Federal department or agency.

2. The undersigned also certifies that it and its principals:
(a) Have not within a three-year period preceding this certification been convicted of or had a civil judgment rendered
against them for commission of fraud or a criminal offense in connection with obtaining, attempting to obtain, or performing a public (Federal, State or local) transaction or contract under a public transaction; violation of Federal or State anti-trust statutes or commission of embezzlement, theft, forgery, bribery, falsification or destruction of records, making false statements, or receiving stolen property.
(b) Are not presently indicted for or otherwise criminally or civilly charged by a governmental entity (Federal, State or local) with commission of any of the offenses enumerated in paragraph 2.(a) of this Certification; and
(c) Have not within a three-year period preceding this certification had one or more public transactions (Federal, State or local) terminated for cause or default.

3. Where the undersigned is unable to certify to any of the statements in this certification, an explanation shall be attached to this certification.

Dated this 19 day of 2013.
By _____
Authorized Signature/Contractor
FORTUNA M. BICHACHI
Typed Name/Title
E.L.C.I. CONSTRUCTION GROUP, INC.
Contractor's Firm Name
626 N.E. 124 St. N. MIAMI FL. 33161
Street Address

Building, Suite Number
N. MIAMI FL. 33161
City/State/Zip Code
305-891-7990
Area Code/Telephone Number

To:

City of Key West
3140 Flagler Ave.
Key West, FL 33040

RE: Equal Benefits Compliance Declaration
Reference: City of Key West Ordinance 2-799

Company: E.L.C.I. CONSTRUCTION GROUP, INC.

Address: 626 N.E. 124 St.
N. MIAMI FL 33161

Phone: (305) 891-7990

Pursuant to City Ordinance Section 2-799, Requirements for City Contractors to Provide Equal Benefits for Domestic Partners, E.L.C.I. CONSTRUCTION GROUP, INC makes the following declaration:

E.L.C.I. CONSTRUCTION GROUP, INC makes all benefits available on an equal basis to its employees with spouses and its employees with domestic partners, and to the spouses and domestic partners of employees, in all locations where work on the contracts with the City of Key West is performed, except where Federal Law dictates otherwise. Benefits affected by such regulations include, but may not be limited to, family medical leave, Flexible Spending Accounts, and Health Savings Accounts. Further, the IRS dictates which of these benefits may be taxable.

Please contact FORTUNA M. BICHACHI at (305) 891-7990 with any questions regarding this declaration.

I declare under penalty of perjury under the laws of the State of Florida that the foregoing is true and correct and that I am authorized to bind this entity contractually.

Signature of Authorized Person

3-11-13
Date

FORTUNA M. BICHACHI
Printed Name of Authorized Person

Catalog Cuts for Fuel Tank

FIREGUARD®

FIRE-RATED ABOVEGROUND TANKS

U.S. Patent #5695089 & #5809650

modern

UL 2085 Protected AST

Visit our Web Site: www.modweldco.com
Email us at: modern@modweldco.com

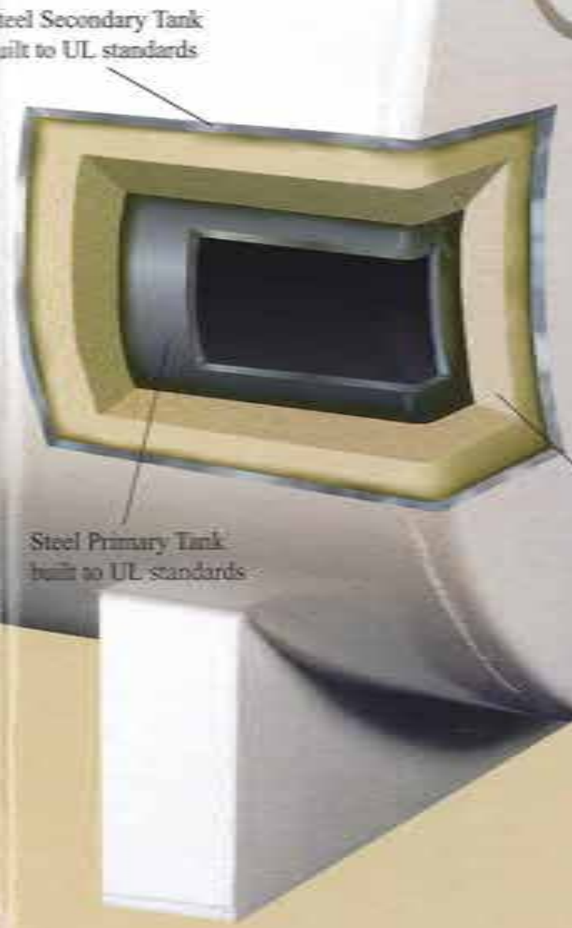
FIREGUARD®

is the New Generation of fire-rated ASTs, going far beyond those "first generation" tanks which were merely enclosed in concrete.

- Fireguard® was the first AST of its design to obtain a UL Listing for secondary containment.
- Fireguard®'s secondary containment can be tightness tested on-site with standard testing procedures!
- Fireguard®'s exterior steel wall provides superior weatherability and low-cost maintenance. Unlike concrete, cracking or spalling will never be a problem!
- Fireguard®'s unique thermal insulating material is 75% lighter than concrete.... shipping, installation and relocation costs are reduced!
- The Fireguard® technology is patented under U.S. Patent #5695089 and #5809650 for "Lightweight Double Wall Storage Tank."
- Fireguard® is a UL approved core component for the 2244 system listing

Is Your Aboveground Tank Everything It's Cracked Up to Be?

FIREGUARD®	vs.	Concrete Encased
• Secondary containment is testable on-site using standard, economical testing procedures.		• The secondary containment on certain designs may require elaborate and expensive procedures to be tested on-site.
• Fireguard®'s steel outer wall provides low-cost maintenance and protects the insulation material from weathering.		• Exposed concrete outer wall is susceptible to cracking, spalling and weathering - problems that are expensive to correct and are usually not covered by warranty.
• An average 12,000 gallon Fireguard® weighs under 30,000 pounds - well within the legal load limit for trucking.		• An average 12,000 gallon concrete-encased tank weighs upwards of 100,000 pounds - imagine the hassles involved in handling that tank.



Fireguard® tanks accommodate every site requirement:

- Significantly more size options than most competitive brands
- Capacities range from 186 to 50,000 gallons
- Cylindrical or rectangular design
- Compartmentalized configurations
- Ballistics resistant
- Impact resistant
- Support designs available for seismic zones 0 through 4

Lightweight thermal insulation

- Unique feature that helped Fireguard® exceed the UL 2-hour fire test
- Sufficiently porous to facilitate quick emergency venting and/or leak detection

GSA Federal Supply Schedule
GSA FSS Contractor

Contract Number: GS-07F-0134K
PSC Group 54, Part III
Aboveground Storage Tanks/Systems
PSC Classes: 5430

FIREGUARD® SPECIFICATIONS CYLINDRICAL DESIGN			
SAMPLE OUTER TANK DIMENSIONS, ALL DIAMETERS AND LENGTHS ARE NOMINAL			
GALLONS	DIAMETER	LENGTH	APPROX. WEIGHT (lbs.)
186	48	54	2,119
250	48	68	2,513
300	50	72	2,821
500	54	70	2,413
560	54	78	2,606
1,000	54	134	5,338
1,000	70	78	5,005
1,500	70	114	6,537
2,000	70	150	8,309
2,500	70	186	9,644
3,000	70	222	10,979
4,000	78	233	13,523
4,000	90	175	14,072
5,000	79	290	18,998
5,000	103	169	17,149
6,000	79	347	21,961
6,000	103	199	19,206
8,000	103	259	23,319
10,000	103	331	28,256
12,000	103	391	32,370
15,000	127	313	35,821
20,000	127	415	44,506
25,000	127	517	55,891
30,000	127	619	64,575

Please note that all dimensions and weights are approximate. Individual tanks may vary from these values.

FIREGUARD® SPECIFICATIONS RECTANGULAR DESIGN				
SAMPLE OUTER TANK DIMENSIONS ALL DIAMETERS AND LENGTHS ARE NOMINAL				
GALLONS	LENGTH	WIDTH	HEIGHT	APPROX. WEIGHT (lbs.)
186	45	45	56	2,256
250	118	37	37	3,305
250	79	51	37	2,916
500	141	52	37	4,991
750	141	73	37	6,513
1,000	128	73	37	4,607
1,000	89	73	51	4,102
1,500	125	89	45	5,772
2,000	141	87	51	6,679
2,000	141	73	61	6,486
2,500	141	89	61	7,453
3,000	251	73	51	11,572
3,000	118	103	73	9,379
4,000	332	73	51	14,990
4,000	155	103	73	11,640
5,000	337	73	61	16,615
5,000	192	103	73	13,901
6,000	403	73	61	19,631
6,000	229	103	73	16,162
8,000	371	103	61	22,872
8,000	303	103	73	20,684
10,000	461	103	61	27,992
10,000	377	103	73	25,205
12,000	452	103	73	29,788
15,000	387	103	103	38,510
18,000	463	103	103	45,290
24,700	466	138	103	54,539

FIREGUARD®: THE ONLY TANK THAT MEETS ALL OF THESE STANDARDS

- UL-2080 Listed "Fire Resistant" Tanks for Flammable and Combustible Liquids
- UL-2085 Listed "Protected" Aboveground Tanks for Flammable and Combustible Liquids
- Both inner and outer tanks built per UL-142 Standard for Steel Aboveground tanks for Flammable and Combustible Liquids
- Uniform Fire Code, 2000 Edition Article 79 and UFC Standard 79-7 "Protected Tank"
- UL-2244, Aboveground Flammable Liquid Tank Systems, The Fireguard tank can be used as the primary storage containment
- NFPA 30 and 30A, 2000 Edition, National Fire Protection Association
- NFPA 1, Uniform Fire Code™, of the National Fire Protection Association, 2003 Edition Section 3.3.199.5, "Protected Aboveground Tank"
- International Fire Code (IFC), 2000 – Chapter 34
- ULC-S655 Underwriters Laboratories of Canada Standard for Aboveground Tanks for Flammable and Combustible Liquids

Other Standards…

- Ballistics protection per UFC Article 79, and per UL-2085
- Vehicle impact protection per UFC Article 79, and per UL-2085
- California Air Resources Board (CARB) testing requirements for air emissions
- Steel Tank Institute (STI) Standard F941 for Thermally Insulated Aboveground Storage Tanks
- Many fire codes and environmental regulations will accept Fireguard® Secondary Containment Tanks as an alternate to diking requirements

MODERN WELDING COMPANY OF GEORGIA, INC.
300 Prep Phillips Dr., Augusta, GA 30901
Phone: (706) 722-3411 Fax: (706) 724-8133

MODERN WELDING COMPANY OF TEXAS, INC.
715 Sakowitz Street, Houston, TX 77020
Phone: (713) 675-4211 Fax: (713) 675-4062
200 North Main, Rhome, TX 76078
Phone: (817) 636-2215 Fax: (817) 636-2680

MODERN WELDING COMPANY OF FLORIDA, INC.
1801 Atlanta Avenue, Orlando, FL 32806
Phone: (407) 843-1270 Fax: (407) 423-8187

MODERN WELDING COMPANY OF CALIFORNIA, INC.
4141 North Brawley Avenue, Fresno, CA 93722
Phone: (559) 275-9353 Fax: (559) 275-4381

MODERN WELDING COMPANY OF IOWA, INC.
2818 Mt. Pleasant Road, Burlington, IA 52601
Phone: (319) 754-6577 Fax: (319) 754-8428

MODERN WELDING COMPANY OF OHIO, INC.
One Modern Way, Newark, OH 43055
Phone: (740) 344-9425 Fax: (740) 344-6018

MODERN WELDING COMPANY OF OWENSBORO, INC.
1450 East Parrish Avenue, Owensboro, KY 42303
Phone: (270) 683-5523 Fax: (270) 684-5245

Visit our Web Site: www.modweldco.com
Email us at: modern@modweldco.com

Regional Shipments reduce shipping costs!
Contact the nearest Modern Welding Subsidiary for price and delivery.

Catalog Cuts for Fuel Hose Reel

Standard Configuration Shown

800

SPRING REWIND REELS

To handle 3/4" or 1" I.D. hose.

- *Rollformed channel frame for heavy-duty applications.*
- *Non sparking ratchet assembly.*
- *Declutching arbor to prevent damage from reverse winding.*
- *Standard inlet 90° balanced pressure swivel joint 1" female NPT threads.*
- *Standard outlet 1" female NPT threads.*
- *Pressures to 2000 psi (138 bar).*
- *Temperatures from -40° F to +250° F (-40° C to +121° C).*
- *Consult factory for other pressures & temps.*
- *4-way roller assembly.*
- *Constant Tension is available – consult factory.*

For:

- **Fuel Dispensing** (Consult Factory)
- **Waste Oil Evacuation**
- **Air / Water**

Parts Drawing – ISO 42

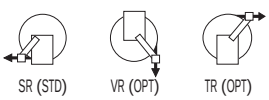
Model Number	Hose Capacity feet / m.		Approx. Weight lb. / kg.		Standard Roller Assy	Reel Dimensions*** in. / mm									
	I.D. (in) I.D. (mm)	3/4" 19	1" 25	NET	SHIP		A	B	C	D	E	F	G	H	X	Y
	O.D. (in) O.D. (mm)	1-9/32" 33	1-9/16" 40													
818-23-24-10.5J		50 15	25 8	87 39	122 55	R206	11.25 286	6 152	10.5 267	23.25 591	24.38 619	15.5 394	23.88 607	12.5 318	6.5 165	20 508
816-25-26-10.5B		60 18	35 11	96 44	131 59	R204	9.25 235	4 102	10.5 267	25 635	26.12 663	13.5 343	25.88 657	13.5 343	4.5 114	21.75 552
818-25-26-10.5B		70 21	50 15	102 46	137 62	R206	11.25 286	6 152	10.5 267	25 635	26.12 663	15.5 394	25.88 657	13.5 343	6.5 165	21.75 552
820-25-26-10.5A		85 26	75 23	131 59	166 75	R308	13.25 337	8 203	10.5 267	25 635	27 686	18.25 464	25.88 657	13.5 343	8.5 216	21.75 552
820-30-31-10.5A		– –	100 30	137 62	172 78	R308	13.25 337	8 203	10.5 267	28.5 724	30.5 775	18.25 464	31.38 797	17 432	8.5 216	25.25 641
820-30-31-15.5A		100 30	– –	145 66	180 82	R308	13.25 337	8 203	15.5 394	28.5 724	30.5 775	18.25 464	31.38 797	17 432	8.5 216	25.25 641

Notes: A hose stop is necessary on hose to keep spring from unwinding.

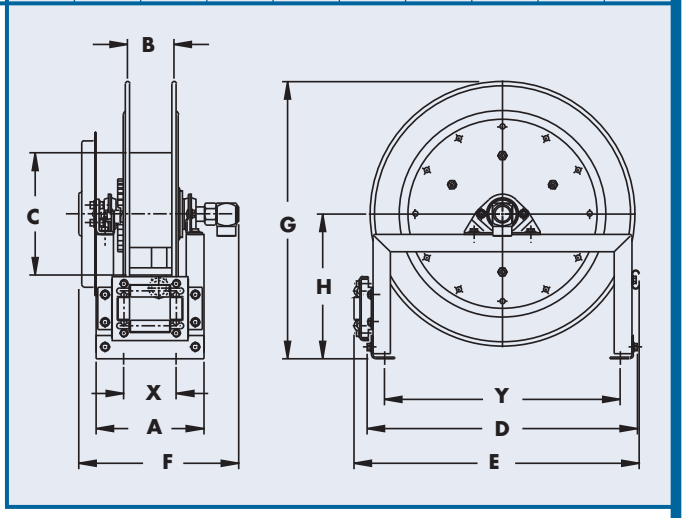
1. Specifications subject to change.
2. Reels models and capacities shown are for standard drag applications; for vertical lift applications consult factory.
3. Other sizes, from standard components, available on request.
4. **Finish:** refer to Page 4.
5. **Be sure to check dimensions and weights prior to ordering.**

NOTICE: A Flexible Connector must be used between the inlet pipe and the inlet swivel joint.

*** x,y indicate mounting holes. See page 2



Available Roller Positions



Catalog Cuts for Doors

Qualifications:

1 Doors - Flush type, 1 3/4" thick, 14 gauge. A60 galvanized steel, shop coat prime finish.

2 Door edges are to be seam spot weld and filleded.

Quote

Quote # : **403474**

3 Doors have top channels capped and sealed.

4 Frames - 12 gauge, Type 316 Stainless Steel, 7 3/4" jamb width.

5 We assume conventional "hollow metal" type double rabbeted frame profile, 2" trim at jambs and 4" trim at heads, and without returns to backbends.

6 Frames include the miter face joints fully and continuously welded and ground smooth and the face seams are invisible. This is a face weld only. Head faces (trim) are regrained to match jambs.

7 For existing wall anchors, price includes preparation for expansion bolt anchors (dimpled hole with spacer). Bolts are included and should be stainless steel to avoid corrosion since carbon (mild/galvanized) steel must not come into direct contact with stainless steel.

8 Stainless Steel Frames-No. 2B (Mill) finish.
This is the finish normally specified when material is to be painted. "2B finish" is an unpolished mill finish. Weld marks and other fabrication abrasions, ultimately covered by painting, will be exposed. Material is furnished unprimed.

9 THESE DOORS AND FRAMES CARRY DADE COUNTY HURRICANE RATING. Next Door Company has successfully tested an 8'0" x 8'0" Flush paired opening doors and frames as a complete unit. A copy of our NOA #12-0229.04 letter is available upon request.

10 THIS VOIDS AND SUPERCEDES PREVIOUS QUOTATION.

11 PLEASE REVIEW ALL QUALIFICATIONS, NOTES, ETC. TO BE CERTAIN SCOPE QUOTED IS IN ACCORDANCE WITH YOUR REQUIREMENTS.

Notes:

1 Schedule: Shop drawings: 1 week Production: 6 - 8 weeks
Production lead time starts once all information required to manufacture has been received, including approved shop drawings and progress payment if required.

2 Shop drawings are to be submitted for approval.

3 All stainless steel frame components, anchors, hardware reinforcements, etc. will be stainless steel per Next Door Company's standard material and construction. Use of mild steel (carbon and/or galvanized) components can create corrosion to the stainless steel surfaces.

4 Includes hardware preparation per Next Door Company's NOA letter #12-0229.04.

5 Pricing for alternates is valid only if the alternates are accepted with the base bid and made part of your original purchase order. Any additions, deletions or changes made after original order is placed will be requoted as change order requests.

Special Exclusions:

1 Cleaning and maintenance data.

2 Jobsite storage, handling,protection, installation, etc.

3 Wind loading pressures as indicated on the structural drawings. Structural drawings not furnished.

4 Factory prime finishing.

5 installation of all finish hardware including weather-stripping, sweeps and thresholds.

6 Grout/grouting

7 Spec. section 081113-Part 3-Execution

8 Spec. section 083919-Watertight Doors.

9 Any special requirements or preparations to the stainless steel frames if Bid Option #1 is accepted.

10 Any freight charges.

Price is protected for order placed by 04/11/13 and shipped by 06/10/13

Standard Exclusions:
Unless specifically included in Seller's description of products, Seller excludes from this agreement: hardware, glass and glazing; lead for lead-lined doors or frames; screens and screening; electrical conduit; silencers; thresholds; structural steel frames or other structural or miscellaneous expansion bolts; application of hardware; drilling and tapping for surface applied hardware; protection after delivery; provisions for concealed closures; holders or anchor hinges; installation, supervision of installation, field measurements and all other field labor; bituminous coating; state and local taxes, use or similar taxes,

Two Knuckle

Plain Bearing - Standard Weight

For use on medium weight doors or doors requiring low frequency service

920 Steel with Steel pin
- ANSI A8133

- Handed
- With door closer use ball bearing hinge

Hinge Size		Gauge of Metal	Hole Count	Screw Size	
Inches	mm			Machine	Wood
4½ x 4	114 x 102	0.134	8	¼ x 12-24	1¼ x 12
4½ x 4½	114 x 114	0.134	8	¼ x 12-24	1¼ x 12

Concealed Anti-Friction Bearing - Standard Weight

For use on medium weight doors or doors requiring medium frequency service

AB920 Steel with Steel pin
- ANSI A8112

AB923 Brass with Stainless Steel pin
- ANSI A2112

Stainless Steel with Stainless Steel pin
- ANSI A5112

- Handed

Hinge Size		Gauge of Metal	Hole Count	Screw Size	
Inches	mm			Machine	Wood
4½ x 4	114 x 102	0.134	8	¼ x 12-24	1¼ x 12
4½ x 4½	114 x 114	0.134	8	¼ x 12-24	1¼ x 12

Concealed Anti-Friction Bearing - Heavy Weight

For use on heavy weight doors or doors requiring high frequency service

AB930 Steel with Steel pin
- ANSI A8111

AB933 Brass with Stainless Steel pin
- ANSI A2111

Stainless Steel with Stainless Steel pin
- ANSI A5111

- Handed

Hinge Size		Gauge of Metal	Hole Count	Screw Size	
Inches	mm			Machine	Wood
4½ x 4	114 x 102	0.180	8	¼ x 12-24	1¼ x 12
4½ x 4½	114 x 114	0.180	8	¼ x 12-24	1¼ x 12

Three Knuckle

Plain Bearing - Standard Weight

For use on medium weight doors or doors requiring low frequency service

700 Steel with Steel pin
- ANSI A8133

800 Brass with Stainless Steel pin
- ANSI A2133

Stainless Steel with Stainless Steel pin
- ANSI A5133

- Non-rising removable pin with flush pin and plug
- With door closer use ball bearing hinge

Hinge Size		Gauge of Metal	Hole Count	Screw Size	
Inches	mm			Machine	Wood
3½ x 3½	89 x 89	0.119	6	¼ x 10-24	1 x 9
4 x 4	102 x 102	0.129	8	¼ x 12-24	1¼ x 12
4½ x 4	114 x 102	0.134	8	¼ x 12-24	1¼ x 12
4½ x 4½	114 x 114	0.134	8	¼ x 12-24	1¼ x 12
5 x 4	127 x 102	0.145	8	¼ x 12-24	1¼ x 12
5 x 4½	127 x 114	0.145	8	¼ x 12-24	1¼ x 12
5 x 5	127 x 127	0.145	8	¼ x 12-24	1¼ x 12

Concealed Anti-Friction Bearing - Standard Weight

For use on medium weight doors or doors requiring medium frequency service

AB700 Steel with Steel pin
- ANSI A8112

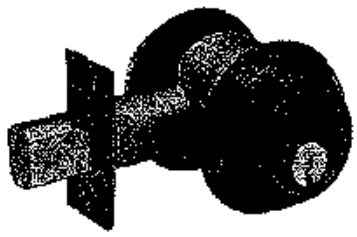
AB800 Brass with Stainless Steel pin
- ANSI A2112

Stainless Steel with Stainless Steel pin
- ANSI A5112

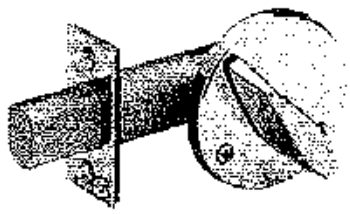
- Non-rising removable pin with flush pin and plug
- Available with SecureCoat® Lifetime finish (US3SC) – AB900 only

Hinge Size		Gauge of Metal	Hole Count	Screw Size	
Inches	mm			Machine	Wood
3½ x 3½	89 x 89	0.119	6	¼ x 10-24	1 x 9
4 x 4	102 x 102	0.129	8	¼ x 12-24	1¼ x 12
4½ x 4	114 x 102	0.134	8	¼ x 12-24	1¼ x 12
4½ x 4½	114 x 114	0.134	8	¼ x 12-24	1¼ x 12
5 x 4	127 x 102	0.145	8	¼ x 12-24	1¼ x 12
5 x 4½	127 x 114	0.145	8	¼ x 12-24	1¼ x 12
5 x 5	127 x 127	0.145	8	¼ x 12-24	1¼ x 12

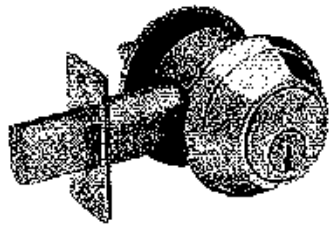
B600/700/800-Series Finishes & Functions



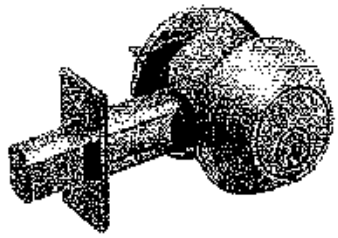
613



605



625



626

B600-SERIES

Schlage's toughest heavy duty Grade 1 commercial deadlock. Furnished with conventional cylinder standard.
Also available with full size interchangeable core cylinder or small format interchangeable core (SFIC) cylinder.

Requires 2⅛" (55mm) prep. UL10B listing standard for *auxiliary* lock on A Label fire doors.

B700-SERIES

Same lock as B600-Series but furnished with Primus Controlled Access cylinder for patented key control, geographical exclusivity and resistance to picking and impressioning.
Also available with Primus interchangeable core cylinder.

B800-SERIES

Same lock as B700-Series but Primus high security cylinder is UL437 Listed to resist drilling and other forms of physical attack.
Not available in interchangeable core.

Finishes

605 Bright Brass
606 Satin Brass
609 Antique Brass
612 Satin Bronze
613 Oil Rubbed Bronze
619 Satin Nickel
625 Bright Chromium Plated
626 Satin Chromium Plated

Functions

ANSI A156.5 BORED DEADBOLT LOCKS

	Single Cylinder Deadlock	Double Cylinder Deadlock	Cylinder x Plate Deadlock	Classroom Deadlock	Cylinder Only Deadlock	Thumbturn Only Deadlock
Schlage	B660P B760P B860P	B662P* B762P* B862P*	B661P B761P B861P	B663P B763P B863P	B664P B764P B864P	B620
ANSI	E2151 Deadbolt thrown or retracted by key outside or thumbturn inside.	E2141 Deadbolt thrown or retracted by key either side.	E2161 Deadbolt thrown or retracted by key outside. Blank plate with exposed screws inside.	E2171 Deadbolt thrown only by key outside; retracted by key outside or thumbturn inside.	E2101 Deadbolt thrown or retracted by key one side. No trim on other side	F2191 Deadbolt thrown or retracted by thumbturn inside. No outside trim.

● B660, B661, B662, B663 available with full size or small format IC cylinders.

B760, B761, B762, B763 available with Primus full size IC cylinders.

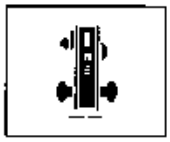
**Caution: Double cylinder locks on doors that are used for exits are a safety hazard in times of emergency. Schlage does not recommend double cylinder locks in these situations. Installation should comply with local life safety codes.*

L • Functions

Single Cylinder Deadbolt Functions

SCHLAGE ANSI

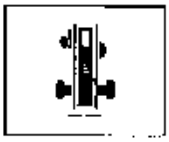
L9453 F20



Entrance Lock

Latchbolt retracted by knob/lever from either side unless outside is locked by 20° rotation of thumbturn. Deadbolt thrown or retracted by 90° rotation of thumbturn. When locked, key outside or knob/lever inside retracts deadbolt and latchbolt simultaneously. Outside knob/lever remains locked until thumbturn is restored to vertical position. Throwing deadbolt automatically locks outside knob/lever. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress.

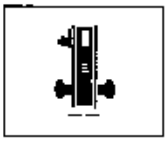
L9456 F13



Corridor Lock

Latchbolt retracted by knob/lever from either side. Deadbolt thrown or retracted by key outside or inside thumbturn. Throwing deadbolt locks outside knob/lever. Turning inside knob/lever simultaneously retracts deadbolt and latchbolt and unlocks outside knob/lever. Inside lever is always free for immediate egress.

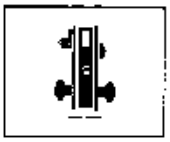
L9465



Closet/Storeroom Lock

Latchbolt retracted by knob/lever from either side. Deadbolt thrown or retracted by key outside.

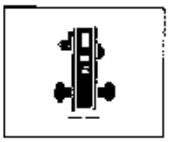
L9473 F21



Dormitory/Bedroom Lock

Latchbolt retracted by knob/lever from either side. Deadbolt thrown or retracted by key outside or thumbturn inside.

L9480



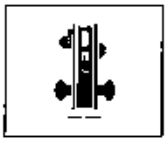
Storeroom Lock With Deadbolt

Latchbolt retracted by key outside or by lever or knob inside. Outside knob/lever always fixed. Deadbolt thrown or retracted by key outside or thumbturn inside. Turning inside knob/lever simultaneously retracts both deadbolt and latchbolt. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress. (Previously XL11-591)

Single Cylinder Deadbolt Functions, Continued

SCHLAGE ANSI

L9485



Hotel or Restroom Lock

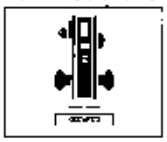
Latchbolt retracted by key outside or by knob/lever inside. Outside knob/lever always fixed. Deadbolt thrown or retracted by inside thumbturn. When deadbolt is thrown, all keys become inoperative except emergency or display keys. Turning inside knob/lever retracts both deadbolt and latchbolt simultaneously. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress.

L9486 F15

Hotel or Restroom Lock with "Do Not Disturb" Indicator

Latchbolt retracted by key outside or by knob/lever inside. Outside knob/lever always fixed. Deadbolt thrown or retracted by inside thumbturn. When deadbolt is thrown, "DO NOT DISTURB" plate is displayed. All keys become inoperative except emergency or display keys. Turning inside knob/lever retracts both deadbolt and latchbolt simultaneously. Auxiliary latch deadlocks latchbolt when door is closed. Inside lever is always free for immediate egress.

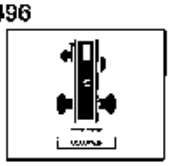
L9486 x L583-375



L9486 With "OCCUPIED" Indicator

Latchbolt retracted by key outside or by knob/lever inside. Outside knob/lever always fixed. Deadbolt thrown or retracted by inside thumbturn. When deadbolt is thrown, "OCCUPIED" plate is displayed and all keys become inoperative except emergency keys. Turning inside knob/lever simultaneously retracts both deadbolt and latchbolt. Auxiliary latch deadlocks latchbolt when door is closed. (Previously XL11-580) Inside lever is always free for immediate egress.

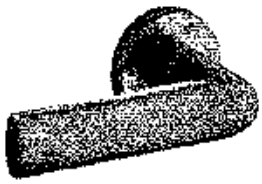
L9496



Privacy With "OCCUPIED" Indicator

Knob/lever retracts latchbolt from either side. Deadbolt thrown or retracted by key outside (retraction by key required in the event of an emergency) or inside thumbturn. Throwing deadbolt locks outside knob/lever and displays "OCCUPIED" plate. Rotating inside knob/lever simultaneously retracts both deadbolt and latchbolt and unlocks outside knob/lever. Inside lever is always free for immediate egress. (Previously XL11-885)

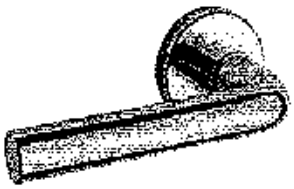
Lever Designs & Finishes



01

Material: Forged brass and cast stainless steel
Finishes: 619, 625, 626, 630

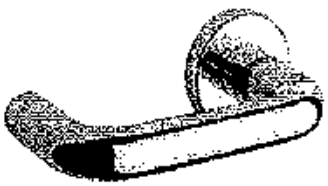
619



02

Material: Forged brass and cast stainless steel
Finishes: 619, 625, 626, 630

625



03

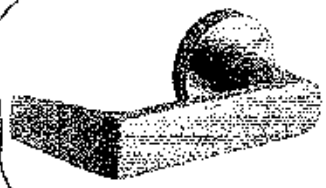
Material: Forged brass, bronze, and cast stainless steel
Finishes: 605, 606, 612, 613, 619, 625, 626, 629, 630

625

05

Material: Forged brass, bronze, and cast stainless steel
Finishes: 619, 625, 626, 630

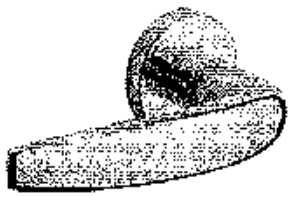
626



06 (D Rhodes)

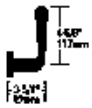
Material: Forged brass, bronze, and cast stainless steel
Finishes: 605, 606, 612, 613, 619, 625, 626, 629, 630

626



07 (D Athens)

Material: Forged brass, bronze, and cast stainless steel
Finishes: 605, 606, 612, 613, 619, 625, 626, 629, 630

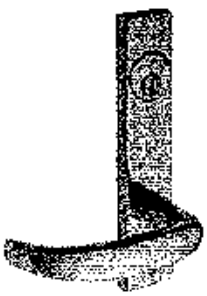


611

Standard Finishes:
Refer to each lock series section for standard finish availability. Standard finish availability varies depending on the function, design and options ordered. Reference Non-Standard Finishes in each lock series section for availability of additional non-standard finishes.

Non-Standard Finishes:
Refer to Non-Standard Finishes in each lock series section for non-standard finish availability. One $250.00 net non-standard finish handling charge applies to each non-standard finish per order. The Schlage Lock Company reserves the right to refuse any order for non-standard finishes without incurring any obligation. If the specific finish you require is not available as a standard or non-standard finish.

Escutcheons, Roses, & Thumbturns



L FULL FACE

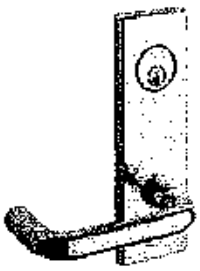
Material: Cold forged brass, bronze, or stainless steel
Finishes: 605, 606, 612, 613, 619, 625, 626, 629, 630
8" x 1¾" x 3/16"
(203mm x 44mm x 11mm)

611

L CONCEALED

Material: Cold forged brass, bronze, or stainless steel
Finishes: 605, 606, 612, 613, 619, 625, 626, 629, 630
8" x 1¾" x 7/16"
(203mm x 44mm x 11mm)

625



N ESCUTCHEON

Material: Heavy wrought reinforced brass, bronze, or stainless steel
Finishes: 605, 606, 612, 613, 619, 625, 626, 629, 630
8" x 2⅝" x 7/16"
(203mm x 65mm x 11mm)

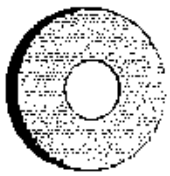
625

Finishes
605 Bright Brass
606 Satin Brass
609 Antique Brass
610 Bright Brass, Blackened
611 Bright Bronze
612 Satin Bronze
613 Oil Rubbed Bronze
616 Antique Bronze
619 Satin Nickel
625 Bright Chromium Plated
626 Satin Chromium Plated
629 Bright Stainless Steel
630 Satin Stainless Steel

A WROUGHT ROSE

2⅛" (54mm) Diameter
Available for use on L-Series knob and lever designs. Order by letter designation corresponding to the design and diameter desired.

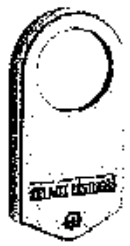
626



B WROUGHT ROSE

2⅝" (65mm) Diameter
Available for use on L-Series knob and lever designs. Order by letter designation corresponding to the design and diameter desired.

626



HOTEL OCCUPANCY INDICATOR 09-611

For lock function L9486P, this unit is used with A or B design roses only. It requires a 1⅜" (35mm) cylinder for 1¾" (44mm) doors. When ordering separately, specify finish.

625

OPTIONAL "EZ" TURN L583-363

Available for rose and escutcheon trim. Disability turn (ADA) option to standard thumbturn. Can be used with any thumbturn function L-Series lock, except L9463 and L463. Specify lock per L583-363 when ordering.

626

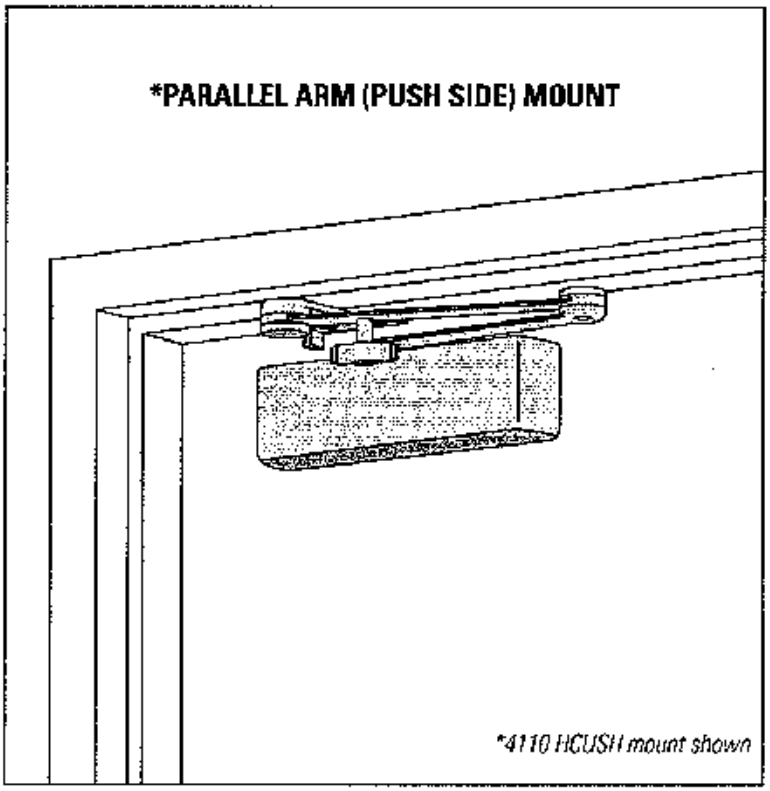
COIN TURN L283-124

For lock functions L9044 and L9444 with rose trim. When ordering separately, specify 09-509 and finish per L283-124.

625

LCN 4110 SERIES

FEATURES



The 4110 SMOOTHEE® is LCN's best performing heavy duty closer designed specifically for institutional and other rugged high traffic applications.

- **Ten Million Cycles**
- **Cast Iron**
- **Extra Duty Forged Steel Arm Standard**
- **Double Heat Treated Steel Pinion**
- **All Weather Fluid**
- **LCN® Fast™ Power Adjust**
- **Fast & Accurate Installation**
- **UL & cUL Listed**

- Standard 4110 series closer is shipped with EXTRA DUTY arm, standard plastic cover, 4110-201 FIFTH SCREW SPACER and self reaming and tapping screws. See 4110 Series pages 61 & 62 for options.
- Sized cylinders adjustable for interior doors to 5'0" and exterior doors to 4'0".
- Non-sized cylinder adjustable for interior doors to 4'6" and exterior doors to 3'6".
- Closer mounts parallel arm, specify right or left swinging door.
- 4111 cylinder meets ADA requirements. See 4110 Series page 63.
- Standard or optional custom powder coat finish.
- Optional plated finish on metal cover, arm and fasteners.
- Optional SRI primer for installations in corrosive conditions is available with powder coat only.
- The 4110 Series is UL and cUL listed for self-closing doors without hold-open.
- Tested and certified under ANSI Standard A156.4, grade one.

MOUNTING					FINISH		COVER		CYLINDER			**ARM FUNCTION						
HINGE/PULL SIDE	TOP JAMB (PULL)	TOP JAMB (PUSH)	PARALLEL ARM	STOP FACE	POWDER COAT	PLATED	PLASTIC	METAL	DESIGNER METAL	NON-HANDED	NON-SIZED	ACCESSIBILITY	DELAYED ACTION	AVB***	REGULAR (DOUBLE)	STANDARD (SINGLE)	HOLD-OPEN	FUSIBLE LINK	EDA/HEDA	CUSH/HCUSH	SCUSH/SHCUSH
○	○	○	●	○	●	●	●	●	○	○	●	♿	●	●	○	○	○	180°	180°	110°	110°

● *Available*
○ *Not available*
♿ *Closer available with less than 5.0 lbs. opening force on 36" door.*
***Maximum opening/hold-open point with standard template.*
**** Advanced Variable Backcheck*

LCN CLOSERS
121 W. RAILROAD AVE.
P.O. BOX 100
PRINCETON, IL, USA 61356-0100

PHONE 800-526-2400
FAX 800-248-1460
www.lcn.ingersollrand.com
3/07

LCN 4110 SERIES

PARALLEL ARM (PUSH SIDE) MOUNTING

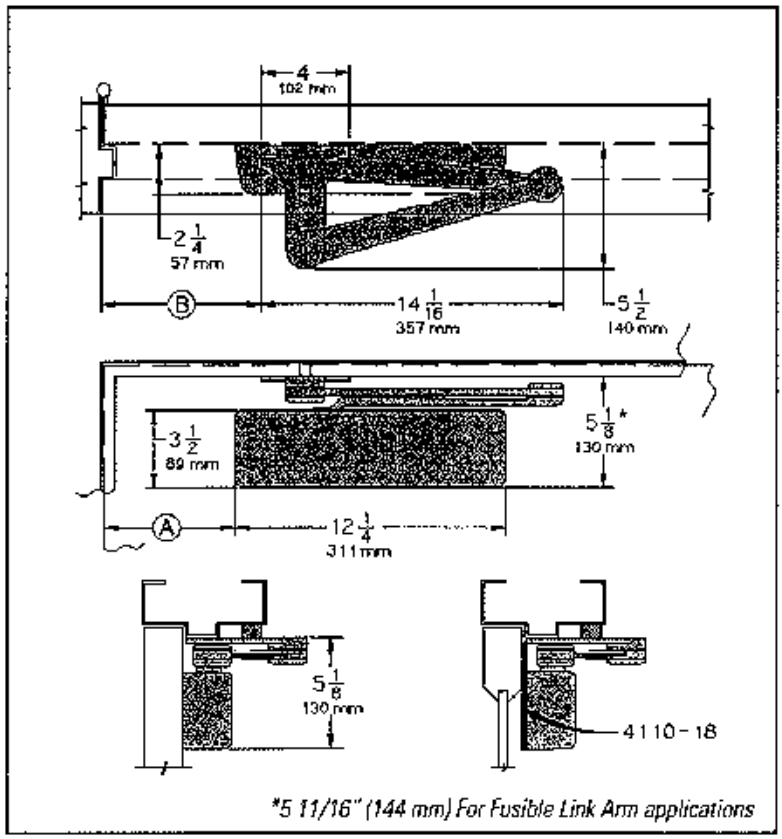
MAXIMUM OPENING

EDA or Fusible Link arm can be templated for
100°,
Ⓐ = 5 15/16" (151 mm)
Ⓑ = 7 1/4" (184 mm)
140°,
Ⓐ = 4 7/16" (113 mm)
Ⓑ = 5 3/4" (146 mm)
or 180°.
Ⓐ = 2 15/16" (75 mm)
Ⓑ = 4 1/4" (108 mm)
Hold-open points up to maximum opening with HEDA or Fusible Link arm.

CUSH arm can be templated for maximum opening at
85°,
Ⓐ = 8 5/16" (211 mm)
Ⓑ = 9 5/8" (244 mm)
90°,
Ⓐ = 7 11/16" (195 mm)
Ⓑ = 9" (229 mm)
100°,
Ⓐ = 6 7/16" (164 mm)
Ⓑ = 7 3/4" (197 mm)
or 110°.
Ⓐ = 5 9/16" (141 mm)
Ⓑ = 6 7/8" (175 mm)
Hold-open point at maximum opening with HCUSH arm.
Spring Cush hold-open points are approximately 5° less than templated stop point.

Options
- Sized or non-sized cylinder.
- Delayed Action and/or Advanced Variable Backcheck cylinder.
- HEDA, CUSH, HCUSH, SPRING CUSH, SPRING HCUSH or Fusible Link arm.
- Metal or lead lined cover.

Special Templates
Customized installation templates or products may be available to solve unusual applications. Contact LCN for assistance.



**5 11/16" (144 mm) For Fusible Link Arm applications*

- **Butt Hinges** should not exceed 5" (127 mm) in width.
- **Auxiliary Stop** is recommended at hold-open point, where a door cannot swing 180°, or where CUSH-N-STOP arm is not used.
- **Clearance** for EDA, or CUSH shoe is 5 1/2" (140 mm) from door face.
- **Top Rail** less than 5 1/8" (130 mm) measured from stop requires PLATE, 4110-18. Plate requires 2" (51 mm) minimum measured from the stop.
- **Stop Width** minimum 1" (25 mm).
- **Head Frame** flush or rabetted requires 4110-145 arm or PA SHOE ADAPTER, 4110-418, Use CUSH FLUSH PANEL ADAPTER, 4110-419 with CUSH arms.
- **Reveal** less than 2 3/4" (70 mm), use CUSH SHOE SUPPORT, 4110-30 with CUSH arms.
- **Blade Stop Spacer,** 4110-61 required to clear 1/2" (13 mm) blade stop.
- **Cush Arm** requires CUSH SHOE SUPPORT, 4110-30 for fifth screw anchorage with CUSH arms.
- **Delayed Action** Add suffix "DEL" to selected cylinder (eg. 4114 DEL). Not available with 4115 or 4116 cylinder. Delays closing from maximum opening to approximately 70°. Delay time adjustable up to approximately 1 minute.
- **Advanced Variable Backcheck** cylinder starts backcheck at approximately 45° instead of the normal 75°. Add suffix "AVB" to selected cylinder. When combined with Delayed Action consult factory for special template.

LCN CLOSERS
121 W. RAILROAD AVE.
P.O. BOX 100
PRINCETON, IL USA 61356-0100

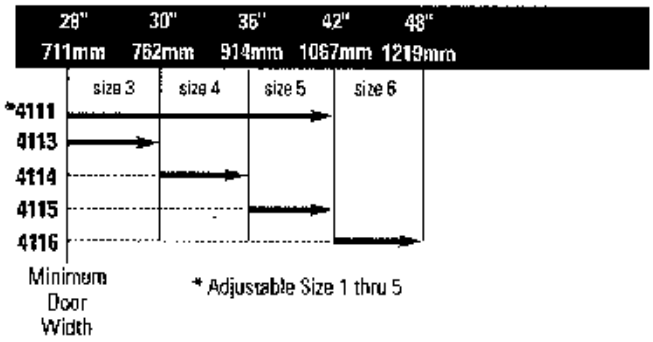
PHONE 800-526-2400
FAX 800-248-1406
www.lcn.ingersollrand.com
3/07

TABLE OF SIZES

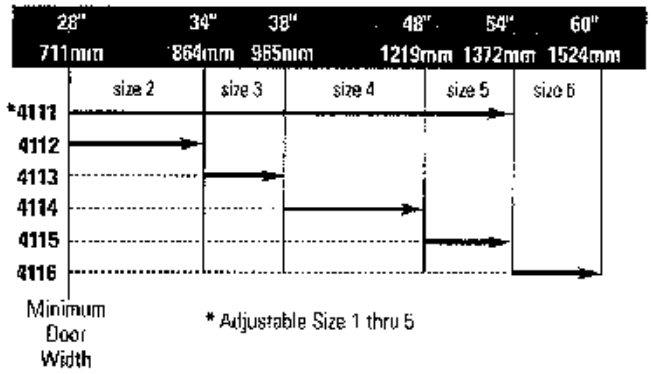
Select closer based on width of door.
The spring power of non-sized 4111 cylinder is adjustable from size 1 through size 5 and is shipped set to size 3.
Sized 4110 series cylinders available in size 2, 3, 4, 5, or 6.
Closing power of all 4110 Series closers can be increased 50%.
Specify next higher size closer where strong drafts exist.
Delayed action not available with 4115 or 4116 cylinder
H - CUSH and SPRING H-CUSH arm not available with 4116 cylinder.

→ Indicates recommended range of door width for closer size

EXTERIOR (and VESTIBULE) DOOR WIDTH



INTERIOR DOOR WIDTH



REDUCED OPENING FORCE 4110 CLOSERS

CAUTION ! Any manual door closer, including those certified by BHMA to conform to ANSI Standard A156.4, that is selected, installed and adjusted based on ADA or other reduced opening force requirements may not provide sufficient power to reliably close and latch a door.

Refer to POWER OPERATORS section for information on systems that meet reduced opening force requirements without effecting closing power.

DOOR WIDTH	36"	42"	48"
8.5* lbs.	4111	4111	4111
5.0* lbs.	4111	4111	4111

** Maximum opening force*

HOW-TO-ORDER 4110 SERIES CLOSERS

1. SELECT CYLINDER SIZE

- ☐ 4111 (adjustable from size 1 to 5)
- ☐ 4112
- ☐ 4113
- ☐ 4114
- ☐ 4115 (DEL not available)
- ☐ 4116 (DEL, SHCUSH or HCUSH arm not available)

2. SPECIFY HAND

- ☐ RH
- ☐ LH

3. SELECT FINISH

- ☐ Standard Powder Coat _____
  Aluminum, Dark Bronze , Tan, Statuary, Light Bronze, Black, Brass.

4110 CLOSER OPTIONS

CYLINDER

- ☐ Delayed Action (DEL), not available with 4115 or 4116)
- ☐ Advanced Variable Backcheck (AVB)

COVER

- ☐ Lead Lined (LL)
- ☐ Metal (MC)

FINISH

- ☐ Custom Powder Coat (RAL) _____
  (handed metal cover required)
- ☐ Plated Finish, US _____
  (handed metal cover required)
- ☐ SRI primer

SPECIFY ARM

- ☐ Hold-Open Extra Duty (HEDA)
- ☐ Fusible Link,165° F (FL)
- ☐ Cush-N-Stop (CUSH)
- ☐ H-Cush-N-Stop (n/a with 4116 cylinder) (HCUSH)
- ☐ Spring Cush (SCUSH)
- ☐ Spring H-Cush (n/a with 4116 cylinder) (SHCUSH)

SCREW PACK

- ☐ TB*, Self-Reaming & Tapping (TBSRT)
- ☐ Wood & Machine Screw (WMS)
- ☐ TB*, Wood & Machine Screw (TBWMS)
- ☐ TORX Machine Screw (TORX)
- ☐ TB* & TORX Machine Screw (TBTRX)

  * Specify door thickness if other than 1 3/4".

INSTALLATION ACCESSORIES

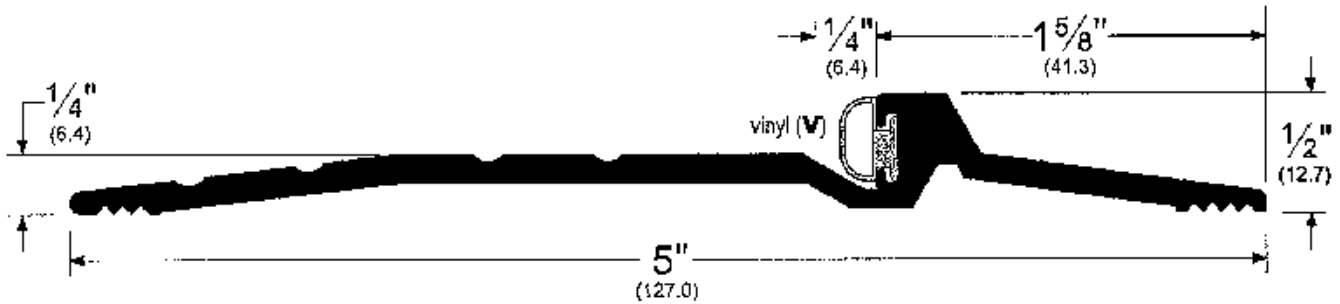
- ☐ Plate, 4110-18
- ☐ CUSH Shoe Support, 4110-30
- ☐ Blade Stop Spacer, 4110-61
- ☐ PA Shoe Adapter, 4110-418
- ☐ CUSH Flush Panel Adapter, 4110-419

SPECIAL TEMPLATE

- ☐ ST- _____

PEMKO

ASSA ABLOY



2005_V

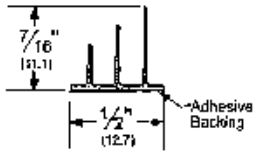
PERIMETER GASKETING

Adhesive Perimeter Gasketing

- For more information on these perimeter gasketing products, please see the Adhesive Gasketing section.

S773_

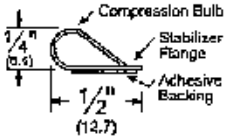
AVAILABLE FINISHES: D, W
AVAILABLE LENGTHS:
AVAILABLE LENGTHS: 17', 18', 20', 21', 25'



- Triple-fin design effectively blocks light and sound from infiltrating a room.
- Product designed as hospitality gasketing (see more hospitality products in the Hospitality Products section).

S88_

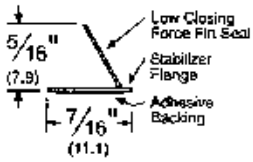
AVAILABLE FINISHES: BL, C, D, TAN, W
AVAILABLE LENGTHS: 17', 18', 20', 21', 25', 30', 204'



- Seal begins compressing at 1/4"; compresses to seal up to a 1/16" gap.

S44_

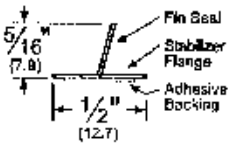
AVAILABLE FINISHES: D, W
AVAILABLE LENGTHS: 17', 18', 20', 21', 25', 510'



- Designed for tighter frames.
- Demonstrates extremely low closing force.
- Seal begins compressing at 5/16"; compresses to seal up to a 1/16" gap.

S77_

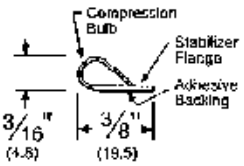
AVAILABLE FINISHES: C, D, W
AVAILABLE LENGTHS: 17', 18', 20', 21', 25'



- Designed for hollow metal and wood meeting stile applications.
- Seal begins compressing at 5/16"; compresses to seal up to a 1/16" gap.

PK33_

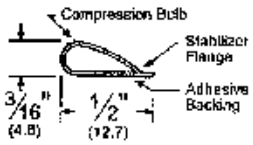
AVAILABLE FINISHES: BL, D, W
AVAILABLE FINISHES: 17', 18', 20', 21', 25', 510'



- Designed for tighter frames.
- Demonstrates extremely low closing force.
- Seal begins compressing at 5/16"; compresses to seal up to a 1/16" gap.

PK55_

AVAILABLE FINISHES: BL, D, W
AVAILABLE FINISHES: 17', 18', 20', 21', 25', 510'

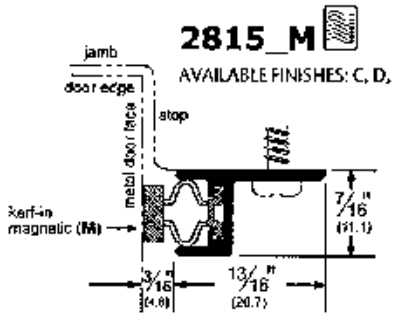


- Designed for tighter frames.
- Demonstrates extremely low closing force.
- Seal begins compressing at 5/16"; compresses to seal up to a 1/16" gap.

Magnetic

2815_M

AVAILABLE FINISHES: C, D, G



▲ **AVAILABLE FINISHES FOR PRODUCTS SHOWN ON THIS PAGE** (see General Information section for finish chart)
C (Clear Anodized) • D (Dark Bronze Anodized) • G (Gold Anodized)
Self-Adhesive Gasketing Colors: • BL (Black) • C (Clear) • D (Dark Brown) • TAN (Tan) • W (White)

PEMKO ASSA ABLOY
VENTURA, CA USA PH. 800.283.9988
MEMPHIS, TN USA PH. 800.824.3018
VANCOUVER, BC CANADA PH. 877.535.7888
TORONTO, ON CANADA PH. 866.243.9816

Catalog Cuts for Flood Panels

4'-0" FLOOD PANEL SYSTEM

SHEET INDEX

# SHEET	DESCRIPTION
1	COVER SHEET
2	PARTS / ASSEMBLY
3-5	DETAILS
5	TOTAL

GENERAL NOTES:

CODES AND DESIGN STANDARDS

1. THIS FLOOD PANEL SYSTEM IS DESIGNED IN ACCORDANCE WITH THE 2004 & 2007 FLORIDA BUILDING CODE, INCLUDING THE HIGH VELOCITY HURRICANE ZONE PROVISIONS, THE AMERICAN SOCIETY OF CIVIL ENGINEERS STANDARDS ASCE 7-05 (MINIMUM DESIGN LOADS FOR BUILDINGS AND OTHER STRUCTURES), AND FEMA TECHNICAL BULLETIN 3-93 (NON-RESIDENTIAL FLOODPROOFING - REQUIREMENTS AND CERTIFICATION).

GENERAL NOTES

1. THE EXISTING HOST STRUCTURE MUST BE CAPABLE OF SUPPORTING THE LOADS IMPOSED BY THIS DESIGN AS VERIFIED BY THE ARCHITECT / ENGINEER OF RECORD. NO WARRANTY, EITHER EXPRESSED OR IMPLIED, IS CONTAINED HEREIN.
2. SYSTEM SHALL BE AS NOTED HEREIN. ALL REFERENCES TO EXTRUSIONS & INSTALLATION SHALL CONFORM TO THAT OF MANUFACTURER'S SPECIFICATIONS AS SUMARIZED HEREIN.
3. ENGINEER SEAL AFFIXED HERETO VALIDATES STRUCTURAL DESIGN AS SHOWN ONLY. USE OF THIS SPECIFICATION BY CONTRACTOR, et. al. INDEMNIFIES & SAVES HARMLESS THIS ENGINEER FOR ALL COST & DAMAGES INCLUDING LEGAL FEES & APPELLATE FEES RESULTING FROM MATERIAL FABRICATION, SYSTEM ERECTION, & CONSTRUCTION PRACTICES BEYOND THAT WHICH IS CALLED FOR BY LOCAL, STATE, & FEDERAL CODES & FROM DEVIATIONS FROM THIS PLAN.
4. EXCEPT AS EXPRESSLY PROVIDED HEREIN, NO ADDITIONAL CERTIFICATIONS OR AFFIRMATIONS ARE INTENDED.
5. THIS DOCUMENT SHALL NOT BE USED OR REPRODUCED WITHOUT THE ORIGINAL SIGNATURE & RAISED SEAL OF FRANK L. BENNARDO, P.E. ON THIS DRAWING. ALTERATIONS, ADDITIONS, HIGHLIGHTING OR OTHER MARKINGS TO THIS DOCUMENT ARE NOT PERMITTED AND INVALIDATE OUR CERTIFICATION.
6. ALL SCREWS AND BOLTS TO BE 316 STAINLESS STEEL
7. SIKAFLEX 11FC SHALL BE USED AT INTERFACE OF ALUMINUM CLADDING AND PANEL FRAME.
8. 1/4" GASKET MATERIAL SHALL BE NEOPRENE CLOSED CELL SPONGE. 1/4" GASKET SHALL BE USED AT INTERFACE OF MOUNTING ANGLES AND THE PANEL, FLOOR AND WALL, AND WHERE OTHERWISE INDICATED.
9. CONCRETE ANCHOR SHALL BE 1/4" POWERS CALK-IN ANCHORS WITH 7/8" EMBEDMENT IN CONCRETE & 1/4-20 REMOVABLE MACHINE SCREW OR EQUAL.
10. MINIMUM ANCHOR EMBEDMENT AND EDGE DISTANCE EXCLUDES STUCCO, FOAM, BRICK, AND OTHER FINISHES. MINIMUM ANCHOR EMBEDMENTS AND EDGE DISTANCES PROVIDED HEREIN ARE INTO SOLID CONCRETE SUBSTRATE.
11. MULTIPLE UNITS MAY BE INSTALLED TO UNLIMITED WIDTH AS SHOWN.
12. THE SYSTEM DETAILED HEREIN IS GENERIC AND DOES NOT PROVIDE INFORMATION FOR A SPECIFIC SITE. FOR SITE CONDITIONS DIFFERENT FROM FROM THE CONDITIONS DETAILED HEREIN, A LICENSED ENGINEER OR REGISTERED ARCHITECT SHALL PREPARE SITE SPECIFIC DOCUMENTS FOR USE IN CONJUNCTION WITH THIS DOCUMENT.
13. THIS SYSTEM IS ONLY APPROVED FOR USE OUTSIDE OF SPECIAL FLOOD HAZARD AREAS, COASTAL HIGH HAZARD AREAS, AND COASTAL A-ZONES, AS DEFINED IN ASCE 7-05. THIS SYSTEM IS NOT DESIGNED FOR USE IN AREAS WITH BREAKING WAVES, BROKEN WAVES, OR FLOOD WATER VELOCITIES GREATER THAN 5 FT/S.

DESIGN CRITERIA

1. LOADS FOR THE DESIGN OF THIS FLOOD PANEL SYSTEM HAVE BEEN DETERMINED ASSUMING THAT THE LOCATION OF THE BUILDING WHERE THE SYSTEM IS TO BE INSTALLED IS OUTSIDE OF SPECIAL FLOOD HAZARD AREAS, COASTAL HIGH HAZARD AREAS, AND COASTAL A ZONES.
2. THIS FLOOD PANEL SYSTEM HAS BEEN DESIGNED FOR THE LOADS AND LOAD COMBINATIONS LISTED IN ASCE 7-05, SECTION 2.0 (COMBINATIONS OF LOADS) INCLUDING THE FOLLOWING FLOOD LOADS IN ACCORDANCE WITH ASCE 7-05 SECTION 5.4 (LOADS DURING FLOODING)

A) HYDROSTATIC LOADS, CAUSED BY WATER WHICH IS EITHER STAGNANT OR MOVES AT VELOCITIES LESS THAN 5 FT/SEC, IN ACCORDANCE WITH ASCE 7-05, SECTION 5.4.

B) HYDRODYNAMIC LOADS: HYDRODYNAMIC LOADS NOT CONSIDERED SINCE FLOW OF WATER IS MOVING AT VELOCITIES LESS THAN 5 FT/SEC IN ACCORDANCE WITH ASCE 7-05 SECTION 5.4.3.

C) WAVE LOADS: ONLY NON-BREAKING WAVE ACTION IS CONSIDERED SINCE NON-BREAKING WAVES ON VERTICAL WALLS CAN ALSO BE COMPUTED AS HYDROSTATIC FORCES, IN ACCORDANCE WITH ASCE 7-05 SECTION 5.4.4 (WAVE LOADS).

D) IMPACT LOADS: NOT CONSIDERED SINCE HYDROSTATIC ANALYSIS IS PERFORMED FOR FLOW OF WATER MOVING AT VELOCITIES OF LESS THAN 5 FT/SEC.

3. THIS FLOOD PANEL SYSTEM IS DESIGNED FOR A MAXIMUM WIND LOAD PRESSURE OF +/- 110 PSF.

ALUMINUM NOTES

1. ALL EXTRUSIONS SHALL BE 6063-T5 ALUMINUM ALLOY, U.O.N. ON DRAWINGS.
2. PANEL CLADDING SHALL BE 0.060" MIN. 5052-H32 ALUMINUM SHEET. CLADDING SHALL BE CONTINUOUS WITHOUT JOINTS FULL HEIGHT AND FULL LENGTH OF EACH PANEL. CLADDING JOINTS SHALL BE LOCATED ONLY AT PANEL JOINTS.

ASSEMBLY NOTES

1. GASKETS SHALL BE BONDED TO THE ALUMINUM WITH SIKAFLEX 11FC ADHESIVE. ADHESIVE SHALL BE USED IN ACCORDANCE WITH THE MANUFACTURER'S SPECIFICATIONS.
2. FASTEN AND COMPRESS GASKET AT FLOOR OR WALL PRIOR TO FASTENING SIDES TO WALL.
3. ALL PENETRATIONS MADE IN FLOOD PANEL DURING ASSEMBLY SHALL BE CAULKED ON BOTH SIDES OF PENETRATION USING 100% SILICONE RUBBER AS MANUFACTURED BY G.E.

FRANK L. BENNARDO, P.E.

01/04/2013

VALID FOR (1) JOB ONLY

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160 SW 12th AVENUE, #106
DEERFIELD BEACH, FL 33442
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1970 N.E. 153RD STREET, BAY 6
N. MIAMI BEACH, FL 33162
PHONE: (305) 945 - 7277 FAX: (305) 945 - 1131

4'-0" FLOOD PANEL SYSTEM
MASTER PLAN SHEET

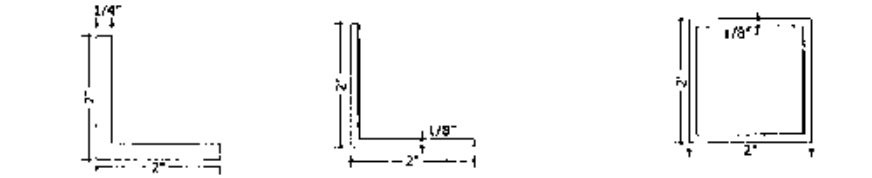
REMARKS	DRAWN	CHKD	DATE
INIT ISSUE	JEM	FLB	10/29/06

08-ATL-0001a

SCALE: 101

PAGE DESCRIPTION:

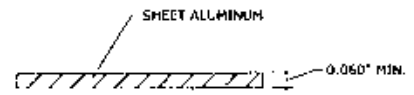
1



① 2" x 2" x 1/4" ANGLE 6063-T5

② 2" x 2" x 1/8" ANGLE 6063-T5

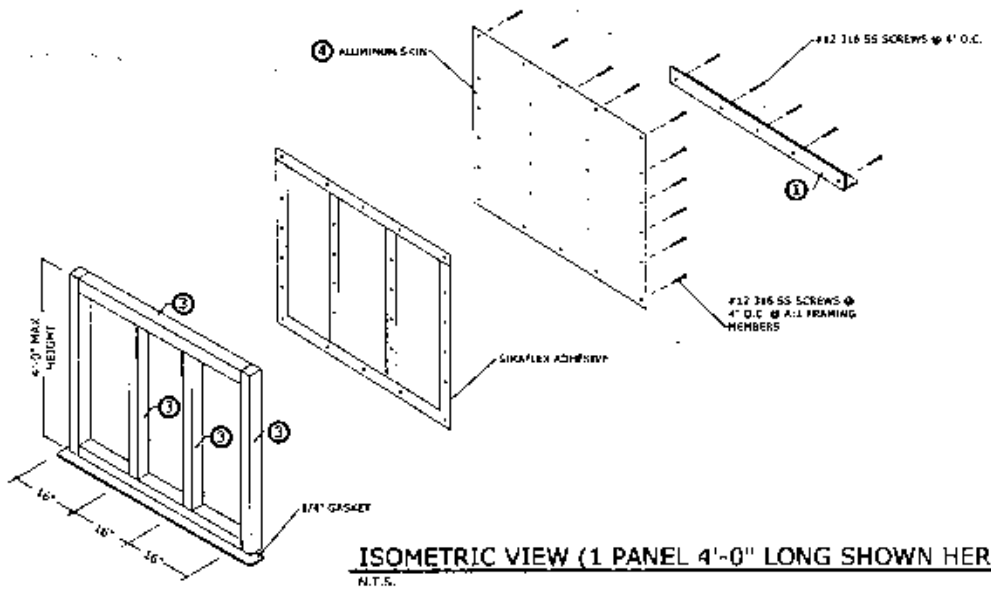
③ 2" x 2" x 1/8 TUBE 6063-T5



④ 0.060" ALUMINUM SKIN 5052 H32

COMPONENTS

N.T.S.



ISOMETRIC VIEW (1 PANEL 4'-0" LONG SHOWN HERE)

N.T.S.

01/04/2013

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4'-0" FLOOD PANEL SYSTEM
MASTER PLAN SHEET

Representative	DRAWN	CHKD	DATE
INITIAL ISSUE	JEM	FLB	08/08/08

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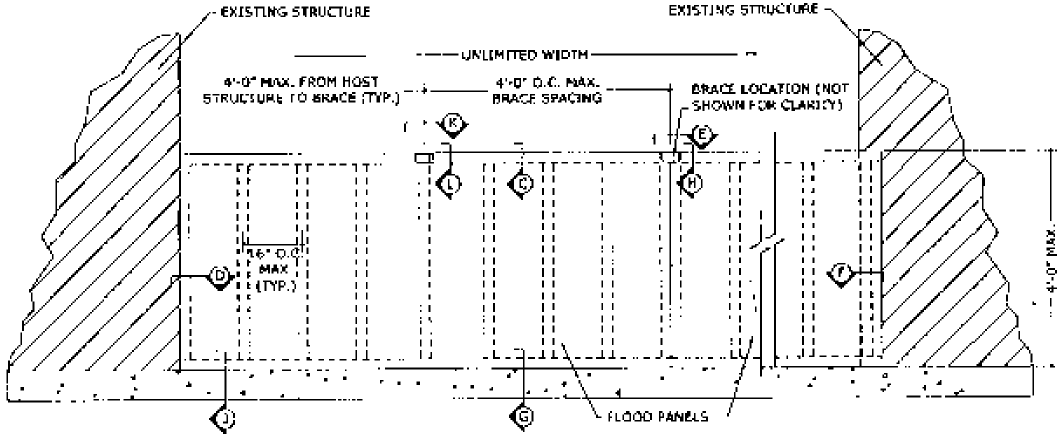
08-ATL-0001a

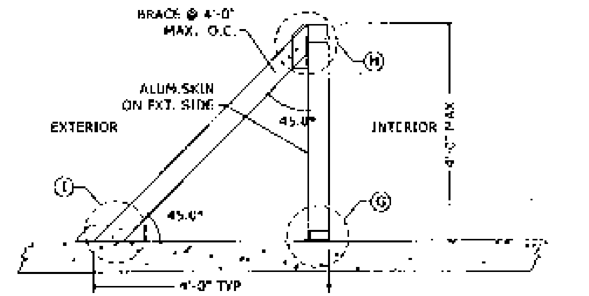
SCALE: 01

PAGE DESCRIPTION:

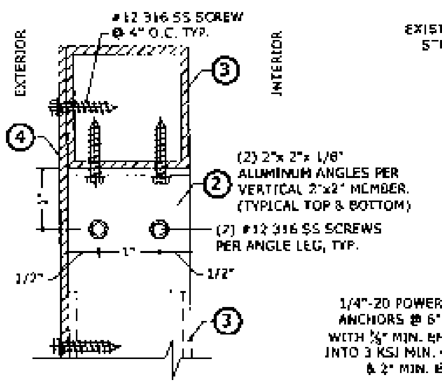
2 of 5



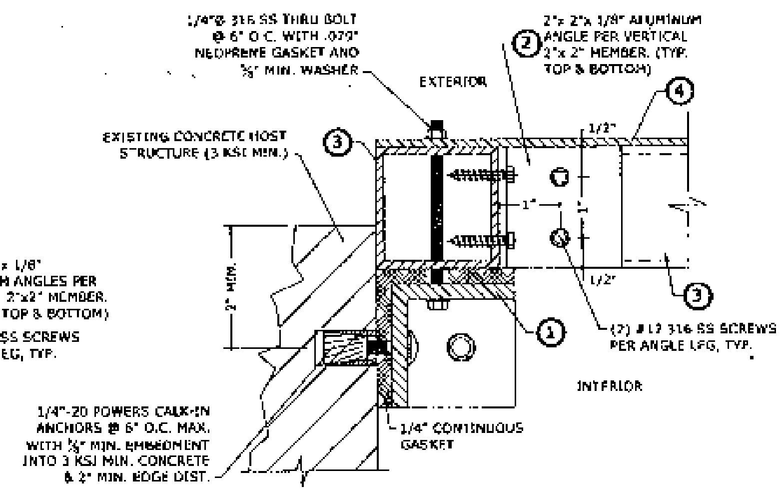
A TYPICAL FLOOD PANEL FRONT ELEVATION
N.T.S.



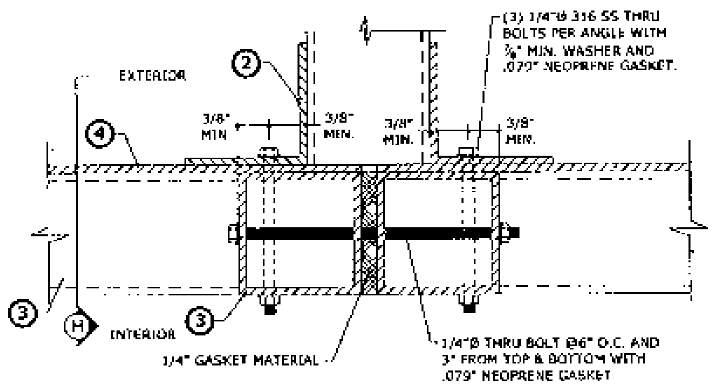
B TYPICAL FLOOD PANEL SIDE ELEVATION
N.T.S.



C TOP OF PANEL DETAIL
6" = 1'-0"



D TRAP MOUNT DETAIL
6" = 1'-0"



E PANEL TO PANEL DETAIL
6" = 1'-0"

FRANK L. BENNARDO, P.E.

01/04/2013

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4'-0" FLOOD PANEL SYSTEM
MASTER PLAN SHEET

REMARKS	DRWN	CHKD	DATE
INIT ISSUE	JEM	FLB	08/29/08

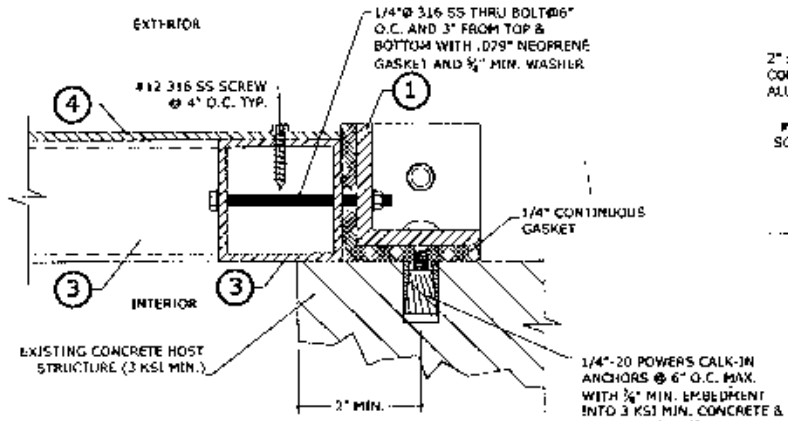
08-ATL-0001a

SCALE: 01

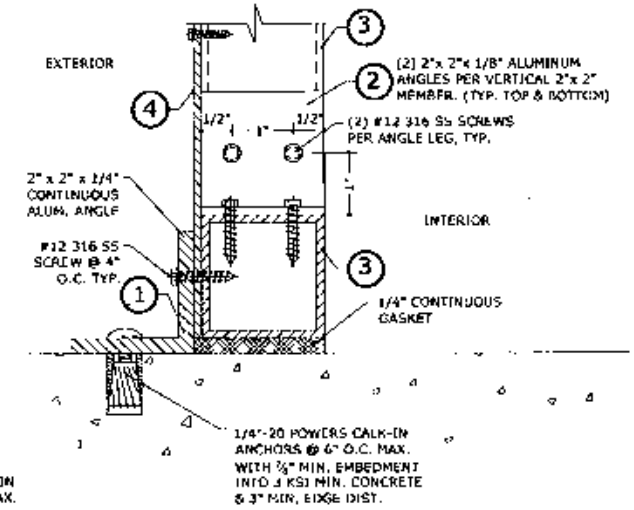
PAGE DESCRIPTION:

5

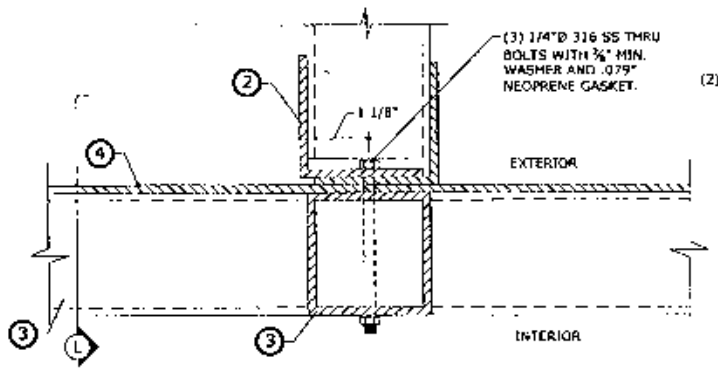
3



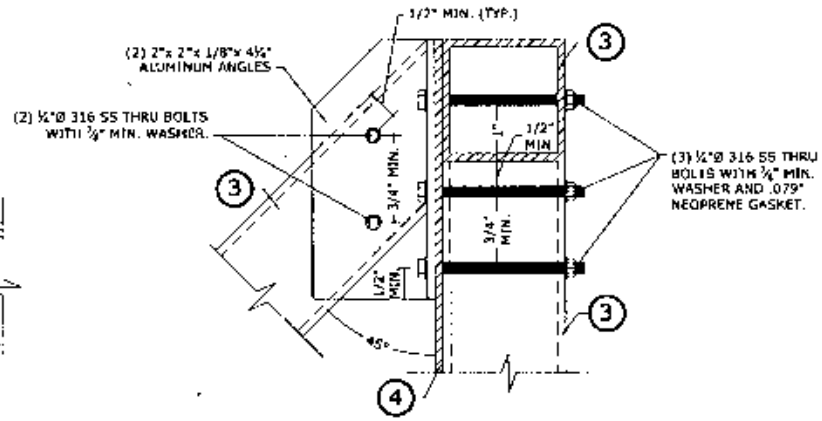
F WALL MOUNT DETAIL
6" = 1'-0"



G FLOOR MOUNT DETAIL
6" = 1'-0"



K BRACE TO PANEL DETAIL
6" = 1'-0"



L DIAGONAL BRACE TOP DETAIL
6" = 1'-0"

FRANK L. BERNARDO, P.E.
46046549

01/04/2013

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VALID ONLY WITH RAISED ENGINEER SEAL

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1970 N.E. 153RD STREET, BAY 6
N. MIAMI BEACH, FL 33162
PHONE: (305) 945 - 7277 FAX: (305) 945 - 1131

4'-0" FLOOD PANEL SYSTEM
MASTER PLAN SHEET

REMARKS	DATE
PERMIT ISSUE	01/04/13

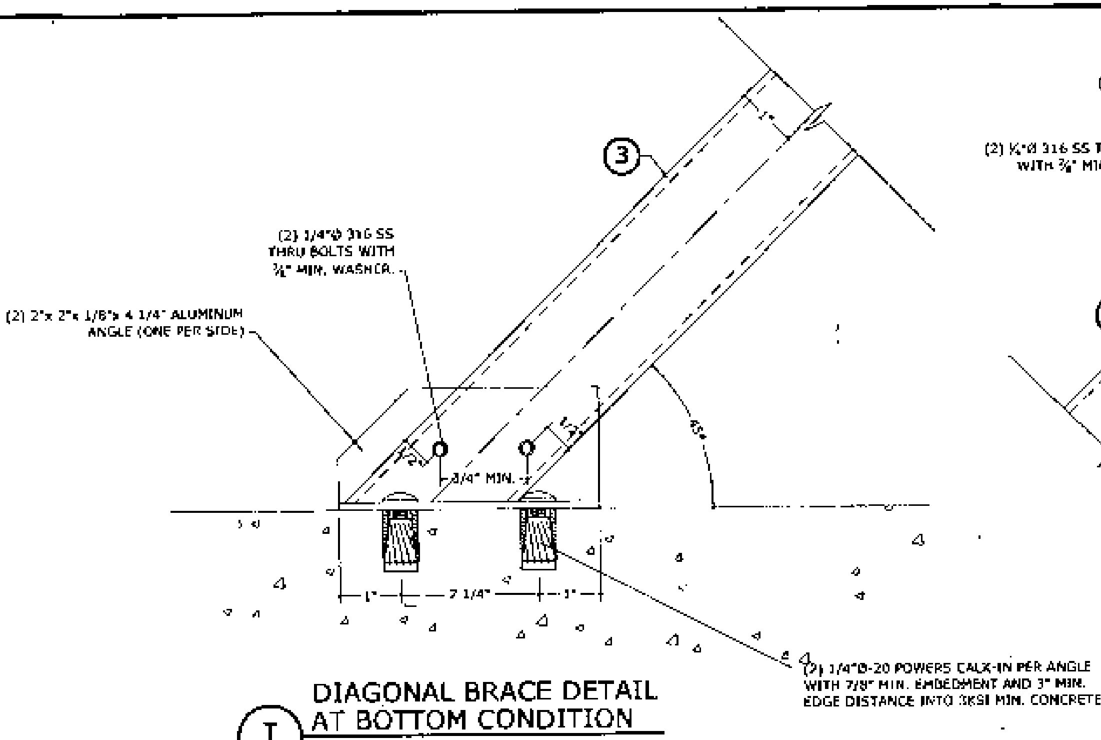
08-ATL-0001a

SCALE: 01

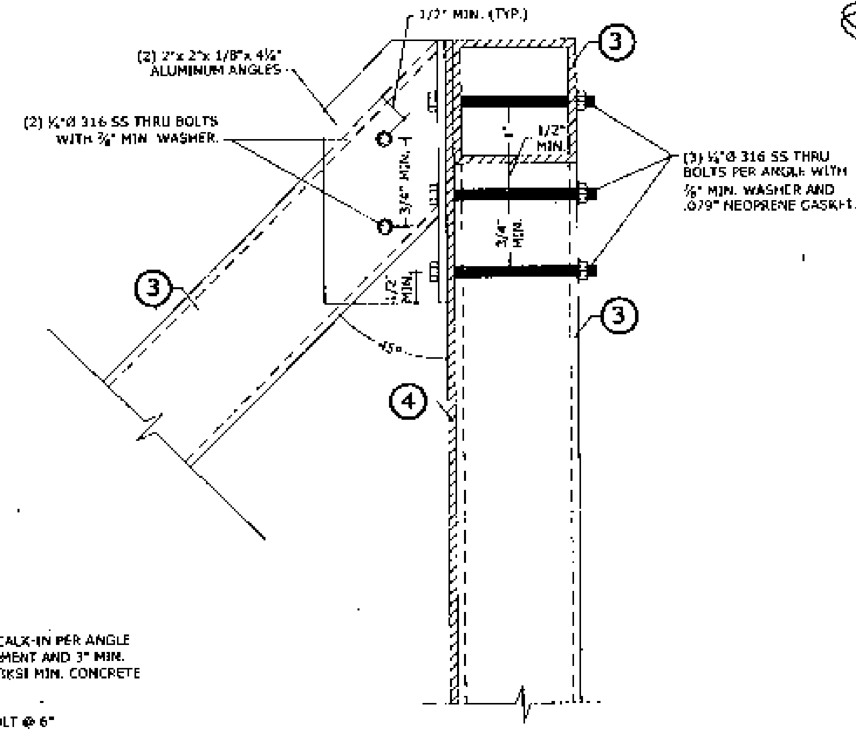
PAGE DESCRIPTION:

4

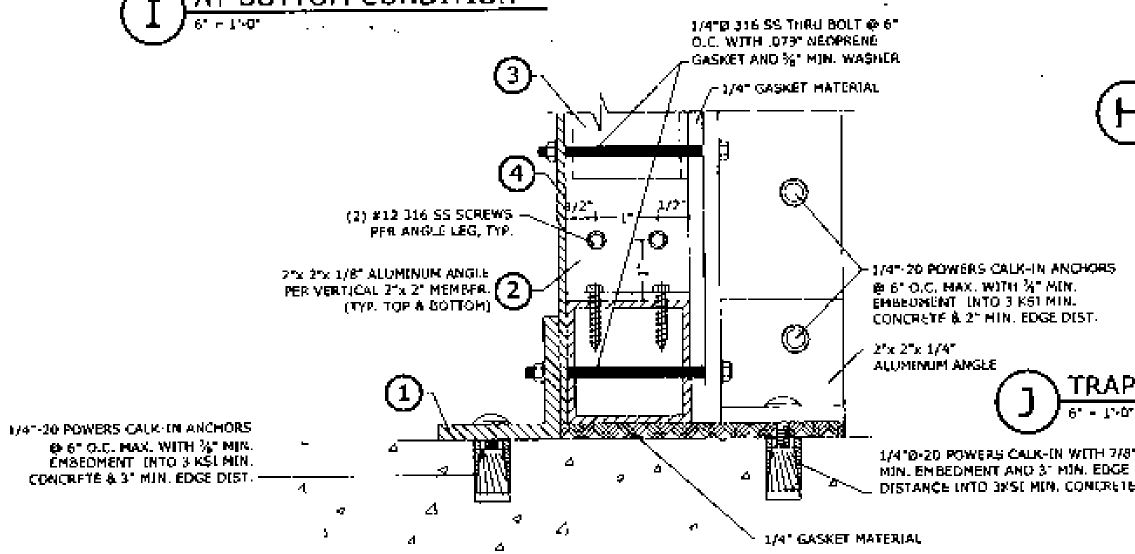
5



I DIAGONAL BRACE DETAIL AT BOTTOM CONDITION
6" = 1'-0"



H DIAGONAL BRACE TOP DETAIL AT PANEL TO PANEL CONDITION
6" = 1'-0"



J TRAP MOUNT DETAIL
6" = 1'-0"

FRANK L. BENNARDO, P.E. #PE0046549
01/04/2013

ENGINEERING EXPRESS®
160 SW 12th AVENUE, #106
DEERFIELD BEACH, FL 33442
PH: (954) 354-0660 FAX: (954) 354-0443
WWW.ENGEXP.COM
A. FRANK L. BENNARDO, P.E., INC. INNOVATION

ATLANTIC SHUTTERS, INC.
1970 N.E. 153RD STREET, BAY 6
N. MIAMI BEACH, FL 33162
PHONE: (305) 945 - 7277 FAX: (305) 945 - 1131

4'-0" FLOOD PANEL SYSTEM
MASTER PLAN SHEET

REMARKS	DRWN	CHKD	DATE
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Catalog Cuts for HVAC Equipment

Infinity® 17

Air Conditioner

Carrier®

turn to the experts℠

WeatherShield™

INFINITY® SERIES

Two-Stage Extra-Efficient Air Conditioner
Designed for Harsh Coastal Climates
with up to 17.0 SEER

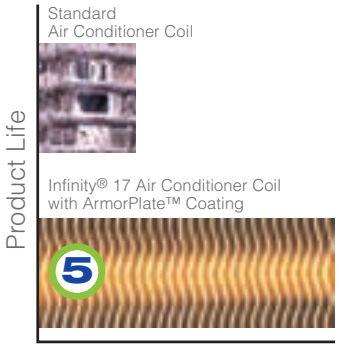
Innovation and the Environment

Over 100 years ago, a humble but determined engineer solved one of mankind's most elusive challenges by controlling the indoor environment. A leading engineer of his day, Dr. Willis Carrier would file more than 80 patents over the course of his career. His genius would enable incredible advancements in health care, manufacturing processes, food preservation, art and historical conservation, indoor comfort and much more.

Carrier's foresight changed the world forever and paved the way for over a century of once-impossible innovations. Yet in addition to being an accomplished inventor, he was also an avid outdoorsman. Carrier recognized the power and beauty of the natural environment. This appreciation of our world and its resources continues to guide Carrier Corporation today. We will never rest on our accomplishments, but instead consistently look for ways to improve our products, our environment and our world.

The Infinity® 17 air conditioner substantiates our commitment to your comfort, delivering environmentally sound, energy-efficient cooling in coastal areas.

Leaders in Technology



Testing by Carrier® engineers has shown the Infinity 17 air conditioner's coil to last longer than a standard coil in harsh coastal conditions.

As an ENERGY STAR® partner, Carrier Corporation has determined that the Infinity® 17 air conditioner meets ENERGY STAR guidelines for energy efficiency.

Proper sizing and installation of equipment is critical to achieve optimal performance. Split system air conditioners and heat pumps must be matched with appropriate coil components to meet ENERGY STAR criteria. Ask your dealer for details or visit www.energystar.gov.

1 Extra-Consistent Comfort

Standard systems can mindlessly blast cooled air at one speed before shutting off, which can lead to widely fluctuating temperatures. The Infinity® 17 air conditioner with two-stage scroll compressor, when properly matched with a Carrier® compatible indoor unit, runs on low-stage up to 80% of the time to maintain consistent comfort. Two-stage operation also contributes to reduced energy usage, helping achieve up to 17.0 SEER cooling efficiency.

2 Environmentally Sound Refrigerant

Carrier led the industry by incorporating non-ozone-depleting Puron® refrigerant into air conditioners back in 1996. Millions of Puron refrigerant units in operation today are a testament to the reliability, durability and enduring quality of these products.

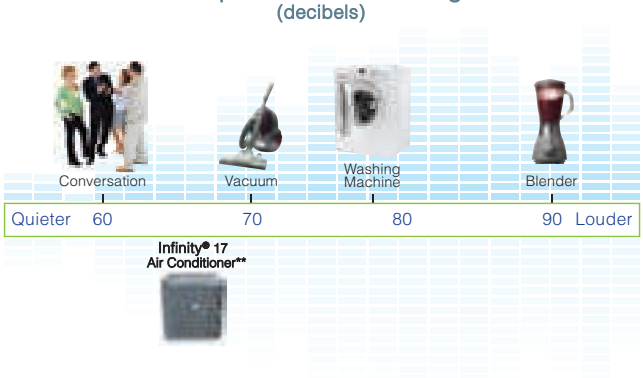
3 Enhanced Comfort and Peace of Mind

By combining the intuitive Infinity® control with the Infinity control board in the air conditioner itself, Carrier puts enhanced comfort at your fingertips. When installed as part of a complete Infinity system, you control temperature schedules, heating, cooling, humidification, dehumidification, fan speeds and more, all from one easy-to-use control on the wall in your home. This system monitors air conditioner functions, makes adjustments to maximize performance and provides maintenance reminders on the Infinity control.

4 Quiet Operation

The Infinity® 17 air conditioner quietly cools your home with sound levels as low as 66 dBA. Our exclusive Silencer System II™ technology features a silencer top, integrated fan motor, forward-swept fan blades, compressor vibration isolator plate, sound hood and split-post compressor grommets to help deliver quiet operation by maximizing airflow and minimizing vibration.

Comparison Sound Ratings
(decibels)



5 Uncompromising Quality

ArmorPlate™ coil coating protects the outdoor coil fin from harsh salt air. A specially formulated epoxy is permanently bonded to the coil surfaces preventing the destructive galvanic corrosion that is common in coastal areas.

** Per standard testing as described by ARI 270-95 in cooling mode. Other sound levels, mentioned for comparison, as published at http://www.noisyplanet.nidcd.nih.gov/SiteCollectionDocuments/Bookmark_2up.pdf.

It's About Your Comfort

The Carrier® Infinity® 17 air conditioner represents years of design, development and testing with one goal in mind – making you more comfortable. We have taken the lead in creating new technologies that deliver the comfort and efficiency you deserve while staying ahead of industry trends and global initiatives.

All year long, humidity affects the temperature at which you feel most comfortable. That's why Carrier® Ideal Humidity System® technology plays such an important role in your comfort. When you add the Infinity® control, Carrier humidifier and Infinity furnace or fan coil to the Infinity 17 air conditioner, Ideal Humidity System technology gives you enhanced control over humidity levels for greater comfort even when your system isn't calling for heating or cooling.† You'll feel cooler at higher temperatures in the summer and warmer at lower temperatures in the winter.

Carrier gives you ultimate command of comfort, performance and energy savings when you include an Infinity® control and Infinity variable-speed furnace or fan coil to create an Infinity system. A complete Infinity system provides unprecedented control of not only temperature, but also humidity, dehumidification, fan speed, weekly comfort schedules and more. This smart system can even monitor operation and maintenance items and provide service reminders such as when it's time to change the filter.

Puron® refrigerant is environmentally sound and won't deplete the ozone layer. Carrier® systems with Puron refrigerant set the standard for environmentally sound air conditioner and heat pump performance well ahead of industry competitors. Today, Carrier air conditioners and heat pumps using Puron refrigerant show exceptional reliability and are a testament to our industry leadership.

† Ideal Humidity System technology continually monitors indoor humidity, indoor temperature and outdoor temperature, and has the ability to turn on your comfort system just for dehumidification in the cooling season or humidification in the heating season.

Uncompromising Quality

You don't lead an industry for more than 100 years by accident. Carrier has maintained its position and reputation through diligent, uncompromising quality control at every stage of a product's life – from concept to completion. Proven to last longer than standard air conditioner coils, Infinity® 17 air conditioner coils with ArmorPlate™ coating are the perfect choice for homeowners living in coastal areas. Once our product is installed at your home, you can be confident that durable construction and built-in reliability features ensure your comfort for years to come.

- Dual paint coverage: Coverage on all exposed sheet metal delivers additional protection against harsh coastal conditions. The Carrier® dual paint system applies a special protective coating on both the front and back of the metal cabinet to shield it from rust, both inside and out.
- Built-in reliability: Forward-swept fan blades enhance performance and maximize sound reduction. Smart electronics that monitor system operation and a compressor-protecting filter drier help keep critical components operating at their best.
- Durability: WeatherArmor Ultra™ protection shields the outdoor unit from hail, errant soccer balls, lawn equipment and other hazards. Our combination of a galvanized steel cabinet, louvered coil guard and baked-on powder paint provides superior rust protection.

Limited Warranty

10 YEAR LIMITED WARRANTY

To the original owner, the Carrier® Infinity® 17 air conditioner is covered by a 10-year parts limited warranty upon timely registration. The limited warranty period is five years if not registered within 90 days of installation. Carrier is so confident in the reliability of this unit that we are also offering a five year parts limited warranty on seacoast corrosion. Jurisdictions where warranty benefits cannot be conditioned on registration will receive the registered limited warranty period. See warranty certificate at carrier.com for complete details and restrictions. Be sure to ask your Carrier dealer about optional labor warranties.

What Efficiency Means to You

Air conditioners are powered by electricity. You can compare efficiencies of different air conditioner models by checking the SEER (Seasonal Energy Efficiency Ratio) ratings, available through your Carrier dealer or manufacturer web sites. The published ratings provide a standardized method for comparing how much cooling performance you get for the electricity you use.

Using these ratings is a lot like miles per gallon for your car – the higher the number, the more efficient the product and the greater potential for savings. Actual air conditioner performance will vary based on the age and condition of your home, personal comfort preferences, weather patterns in your area and much more.

So when you are comparing air conditioners, be sure to look at the SEER ratings before you make your decision.

Energy-Efficient Air Conditioner Designed with Your Comfort in Mind

Greater Operational Efficiency

The Infinity® 17 air conditioner offers plenty of potential for annual savings while providing extra-comfortable cooling. When compared to a standard efficiency air conditioner (13.0 SEER), you can save up to $74 a year in cooling costs.†† And, if you are replacing an older, less efficient model, the savings can be even more significant.

††Values based on AHRI method for estimated operating cost using U.S. average cooling hours in 2011.

UP TO 17.0 SEER RATING

The Infinity® 17 air conditioner offers energy efficiency of up to 17.0 SEER to provide reduced energy usage and environmental impact.

Carrier® Systems for Unmatched Performance in Every Season

Willis Carrier's meticulous attention to quality and detail led to a major culture shift in the way we live indoors. More than a century later, Carrier Corporation operates with a unique willingness to develop new technology, the confidence to revise proven designs and the ability to deliver results with every new installation.

Part of that equation is our nationwide network of experts you can turn to for all of your indoor comfort needs. Your local Carrier dealer is well equipped to evaluate your home – everything from size, window placement, ductwork, venting and other structural specifics – and create a customized system designed around your lifestyle. So when it's time to make a choice for your family's comfort, make the best decision you'll ever make – Carrier – and let the experts do the rest.

A. Air Conditioner
B. Gas Furnace
C. Evaporator Coil
D. Air Purifier
E. Ventilator
F. Humidifier
G. Zoning
H. UV Lamp
I. Infinity Control

The Total Indoor Comfort System

Infinity® Air Conditioner provides reliable, high-efficiency cooling for long-lasting comfort and energy savings.

Infinity Gas Furnace provides reliable, high-efficiency heating for long-lasting comfort and energy savings.

Evaporator Coil is matched with the proper outdoor unit to provide top cooling efficiency and years of reliable service.

Infinity Air Purifier improves air quality by capturing and killing airborne bacteria and viruses and other irritating airborne pollutants in your home.

Ventilator combines fresh outdoor air with conditioned indoor air for improved air quality and maximum efficiency – great for today's tightly constructed home.

Humidifier replenishes moisture to dry air.

Zoning sets different temperatures for up to eight different areas of your home for truly customized comfort and enhanced utility savings.

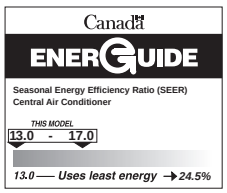
UV Lamp inhibits the growth of contaminants on the indoor coil, leaving your home with cleaner, fresher indoor air.

Infinity Control is more than just a thermostat. It's your interface to the Infinity System that allows you to control temperature, humidity, air quality, fan speed and ventilation.

Model 24ANB7**C

01-824-061-25

MIX
Paper from responsible sources
FSC® C015782



Always look for these symbols, the air conditioner industry seals of certified performance, efficiency and capacity.

Always Ask For FACTORY AUTHORIZED PARTS

www.carrier.com 1-800-CARRIER

A member of the United Technologies Corporation family. Stock Symbol UTX.

Carrier®
turn to the experts℠

24ANB7C**
Infinity® 17 2–Stage Air Conditioner
with Puron® Refrigerant for Coastal Applications
2 to 5 Nominal Tons

Carrier
turn to the experts

Product Data

WeatherShield INFINITY SERIES

Carrier's Air Conditioners with Puron® refrigerant provide a collection of features unmatched by any other family of equipment. The 24ANB7 has been designed utilizing Carrier's Puron refrigerant. The environmentally sound refrigerant allows you to make a responsible decision in the protection of the earth's ozone layer.

This product has been designed and manufactured to meet Energy Star® criteria for energy efficiency when matched with appropriate coil components. Refer to the combination ratings in the Product Data for system combinations that meet Energy Star® guidelines.

NOTE: **Ratings contained in this document are subject to change at any time. Always refer to the AHRI directory (www.ahridirectory.org) for the most up-to-date ratings information.**

INDUSTRY LEADING FEATURES / BENEFITS

Efficiency

- 14 - 18 SEER / 11.5 - 13.7 EER
- Microtube Technology™ refrigeration system

Sound

- Sound level as low as 69 dBA
- Quiet mount split post compressor grommets
- Forward-swept condenser fan blade
- Compressor sound hood
- Laminated steel compressor mounting plate
- 8 pole PSC ball bearing outdoor condenser fan motor

Comfort

- System supports Infinity™ Control or standard 2-stage thermostat controls

Reliability

- Puron® refrigerant - environmentally sound, won't deplete the ozone layer and low lifetime service cost.
- Front-seating service valves
- 2-stage scroll compressor
- Internal pressure relief valve
- Internal thermal overload
- Low pressure switch
- High pressure switch
- Filter drier
- Crankcase Heater standard

Controls and Diagnostics

- Infinity™ control or 2-stage thermostat
- Utility Interface Connection

Durability

WeatherArmor Ultra™ protection package:

- Solid, Durable sheet metal construction
- Steel louver coil guard
- 2-Sided, baked-on, complete coverage, powder paint

WeatherShield Condenser Coil

- Aluminum fin material is pre-coated on both sides with a corrosion protective epoxy phenolic coating.

ArmorPlate™ Condenser Coil

- Aluminum fin material is pre-coated on both sides with a corrosion protective epoxy phenolic thermoset coating.
- Industry leading standard coastal warranty coverage

Applications

- Long-line - up to 250 feet (76.2 m) total equivalent length.

MODEL NUMBER NOMENCLATURE

1	2	3	4	5	6	7	8	9	10	11	12	13
N	N	A	A	A/N	N	N	N	A/N	A/N	A/N	N	N
2	4	A	N	B	7	3	6	C	0	0	3	0
Product Series 24=AC		Product Family A=RES AC	Tier N = Infinity	Major Series B=Puron	SEER 7=17 SEER Nominal	Cooling Capacity		Variations C=Coastal	Open 0=Not Defined	Open 0=Not Defined	Voltage 3=208/230–1	Minor Series 0, 1, 2...

24ANB7C

Puron™ the environmentally sound refrigerant

AHRI CERTIFIED™ www.ahridirectory.org

Use of the AHRI Certified TM Mark indicates a manufacturer's participation in the program For verification of certification for individual products, go to www.ahridirectory.org.

Certified System™

ISO 9001 QMI-SAI Global

c UL us

ENERGY STAR

This product has been designed and manufactured to meet Energy Star® criteria for energy efficiency when matched with appropriate coil components. However, proper refrigerant charge and proper air flow are critical to achieve rated capacity and efficiency. Installation of this product should follow all manufacturing refrigerant charging and air flow instructions. **Failure to confirm proper charge and air flow may reduce energy efficiency and shorten equipment life.**

IdealHumidity

WeatherShield

STANDARD FEATURES

FEATURES	Unit Size – Voltage, Series			
	24–30	36–30	48–30	60–30
ArmorPlate™ Fins	X	X	X	X
Inner and Outer Sheet Metal Surfaces Coated with Baked on Powder Paint	X	X	X	X
Puron Refrigerant	X	X	X	X
Maximum SEER Rating*	17.0	18.0	17.5	16.8
2–Stage Scroll Compressor	X	X	X	X
Crankcase Heater w/Temperature Switch	X	X	X	X
Low Ambient Capability to 0°F (–17.8°C) w/Infinity Control	X	X	X	X
Enhanced Diagnostics w/Infinity Control	X	X	X	X
Utility Interface Connection	X	X	X	X
Louvered Coil Guard	X	X	X	X
Field Installed Filter Drier	X	X	X	X
Front Seating Service Valves	X	X	X	X
Internal Pressure Relief Valve	X	X	X	X
Internal Thermal Overload	X	X	X	X
Long Line capability	X	X	X	X
Low Pressure Switch	X	X	X	X
High Pressure Switch	X	X	X	X
Sound Blanket	X	X	X	X

X = Standard

* With approved combinations

REFRIGERANT PIPING LENGTH LIMITATIONS

Liquid Line Sizing and Maximum Total Equivalent Lengths† for Cooling Only Systems with Puron® Refrigerant:

The maximum allowable length of a residential split system depends on the liquid line diameter and vertical separation between indoor and outdoor units.

See Table below for liquid line sizing and maximum lengths :

Maximum Total Equivalent Length
Outdoor Unit BELOW Indoor Unit

Size	Liquid Line Connection	Liquid Line Diam. w/TXV	AC with Puron Refrigerant Maximum Total Equivalent Length†: Outdoor unit BELOW Indoor Vertical Separation ft (m)								
			0–5 (0–1.5)	6–10 (1.8–3.0)	11–20 (3.4–6.1)	21–30 (6.4–9.1)	31–40 (9.4–12.2)	41–50 (12.5–15.2)	51–60 (15.5–18.3)	61–70 (18.6–21.3)	71–80 (21.6–24.4)
024 AC with Puron	3/8	1/4	75	75	75	50	50	– –	– –	– –	– –
		5/16	250*	250*	250*	250*	250*	225*	175	125	100
		3/8	250*	250*	250*	250*	250*	250*	250*	250*	250*
036 AC with Puron	3/8	5/16	175	150	150	100	100	100	75	– –	– –
		3/8	250*	250*	250*	250*	250*	250*	250*	250*	250*
048 AC with Puron	3/8	3/8	250*	250*	250*	250*	250*	250*	230	160	– –
060 AC with Puron	3/8	3/8	250*	250*	250*	225*	190	150	110	– –	– –

*** Maximum actual length not to exceed 200 ft (61 m)**

† Total equivalent length accounts for losses due to elbows or fitting. See the Long Line Guideline for details.

– – = outside acceptable range

Maximum Total Equivalent Length
Outdoor Unit ABOVE Indoor Unit

Size	Liquid Line Connection	Liquid Line Diam. w/TXV	AC with Puron Refrigerant Maximum Total Equivalent Length†: Outdoor unit ABOVE Indoor Vertical Separation ft (m)							
			25 (7.6)	26–50 (7.9–15.2)	51–75 (15.5–22.9)	76–100 (23.2–30.5)	101–125 (30.8–38.1)	126–150 (38.4–45.7)	151–175 (46.0–53.3)	176–200 (53.6–61.0)
024 AC with Puron	3/8	1/4	100	125	175	200	225*	250*	250*	250*
		5/16	250*	250*	250*	250*	250*	250*	250*	250*
		3/8	250*	250*	250*	250*	250*	250*	250*	250*
036 AC with Puron	3/8	5/16	225*	250*	250*	250*	250*	250*	250*	250*
		3/8	250*	250*	250*	250*	250*	250*	250*	250*
048 AC with Puron	3/8	3/8	250*	250*	250*	250*	250*	250*	250*	250*
060 AC with Puron	3/8	3/8	250*	250*	250*	250*	250*	250*	250*	250*

*** Maximum actual length not to exceed 200 ft (61 m)**

† Total equivalent length accounts for losses due to elbows or fitting. See the Long Line Guideline for details.

REFRIGERANT CHARGE ADJUSTMENTS

Liquid Line Size	Puron Charge oz/ft (g/m)
3/8	0.60 (17.74) (Factory charge for lineset = 9 oz / 266.16 g)
5/16	0.40 (11.83)
1/4	0.27 (7.98)

Units are factory charged for 15 ft (4.6 m) of 3/8" liquid line. The factory charge for 3/8" lineset 9 oz.(266.16 g). When using other length or diameter liquid lines, charge adjustments are required per the chart above.

Charging Formula:

[(Lineset oz/ft x total length) – (factory charge for lineset)] = charge adjustment

Example 1: System has 15 ft of line set using existing 1/4" liquid line. What charge adjustment is required?

Formula: (.27 oz/ft x 15ft) – (9 oz) = (-4.95) oz.

Net result is to remove 4.95 oz of refrigerant from the system

Example 2: System has 45 ft of existing 5/16" liquid line. What is the charge adjustment?

Formula: (.40 oz/ft. x 45ft) – (9 oz.) = 9 oz.

Net result is to add 9 oz of refrigerant to the system

LONG LINE APPLICATIONS

An application is considered Long Line, when the refrigerant level in the system requires the use of accessories to maintain acceptable refrigerant management for systems reliability. See Accessory Usage Guideline table for required accessories. Defining a system as long line depends on the liquid line diameter, actual length of the tubing, and vertical separation between the indoor and outdoor units.

For Air Conditioner systems, the chart below shows when an application is considered Long Line.

AC WITH PURON® REFRIGERANT LONG LINE DESCRIPTION ft (m)
Beyond these lengths, long line accessories are required

Liquid Line Size	Units On Same Level	Outdoor Below Indoor	Outdoor Above Indoor
1/4	No accessories needed within allowed lengths	No accessories needed within allowed lengths	175 (53.3)
5/16	120 (36.6)	50 (15.2) vertical or 120 (36.6) total	120 (36.6)
3/8	80 (24.4)	35 (10.7) vertical or 80 24.4) total	80 (24.4)

Note: See Long Line Guideline for details

VAPOR LINE SIZING AND COOLING CAPACITY LOSS

Acceptable vapor line diameters provide adequate oil return to the compressor while avoiding excessive capacity loss. The suction line diameters shown in the chart below are acceptable for AC systems with Puron refrigerant:

Vapor Line Sizing and Cooling Capacity Losses — Puron® Refrigerant 2-Stage Air Conditioner Applications

Unit Nominal Size (Btuh)	Maximum Liquid Line Diameters (In. OD)	Vapor Line Diameters (In.) OD	Cooling Capacity Loss (%) Total Equivalent Line Length ft. (m)								
			26–50 (7.9–15.2)	51–80 (15.5–24.4)	81–100 (24.7–30.5)	101–125 (30.8–38.1)	126–150 (38.4–45.7)	151–175 (46.0–50.3)	176–200 (53.6–60.0)	201–225 (61.3–68.6)	226–250 (68.9–76.2)
024 2–Stage Puron AC	3/8	5/8	0	1	1	2	3	3	4	4	5
		3/4	0	0	0	0	1	1	1	1	1
036 2–Stage Puron AC	3/8	5/8	1	2	4	5	6	7	9	10	11
		3/4	0	0	1	1	2	2	3	3	4
		7/8	0	0	0	0	1	1	1	1	2
048 2–Stage Puron AC	3/8	3/4	1	2	2	3	4	5	6	7	7
		7/8	0	1	1	2	2	2	3	3	3
		1–1/8	0	0	—	—	—	—	—	—	—
060 2–Stage Puron AC	3/8	3/4	1	2	4	5	6	7	9	10	11
		7/8	0	1	2	2	3	4	4	5	5
		1–1/8	0	0	0	1	1	1	1	1	1

Applications in this area may be long line and may have height restrictions. See the *Residential Piping and Long Line Guideline*.
— Applications in this area are not recommended due to insufficient oil return

PHYSICAL DATA

UNIT SIZE – VOLTAGE, SERIES	24–30	36–30	48–30	60–30
Operating Weight lb (kg)	223 (101)	274 (124)	298 (135)	351 (159)
Shipping Weight lb (kg)	274 (124)	309 (140)	341 (155)	397 (180)
Compressor Type	2–Stage Scroll			
REFRIGERANT	Puron (R–410A)			
Control	TXV (Puron Hard Shutoff)			
Charge lb (kg)	6.63 (3.01)	10.83 (4.91)	11.63 (5.27)	15.13 (6.86)
COND FAN	Propeller Type, Direct Drive			
Air Discharge	Vertical			
Air Qty (CFM)	3008	3530	4650	4800
Motor HP	1/10	1/5	1/4	1/4
Motor RPM	800	800	800	800
COND COIL				
Face Area (Sq ft)	21.56	21.56	25.15	30.18
Fins per In.	25	20	20	20
Rows	1	2	2	2
Circuits	5	7	7	8
VALVE CONNECT. (In. ID)				
Vapor	3/4	7/8	7/8	7/8
Liquid	3/8			
REFRIGERANT TUBES (In. OD)				
Rated Vapor*	3/4	7/8	1–1/8	1–1/8
Liquid	3/8			

*Units are rated with 25 ft (7.6 m) of lineset length. See *Vapor Line Sizing and Cooling Capacity Loss* table when using other sizes and lengths of lineset.

ELECTRICAL DATA

Unit Size – Voltage, Series	V/PH	OPER VOLTS*		COMPR		FAN	MCA	MIN WIRE SIZE†	MIN WIRE SIZE†	MAX LENGTH ft. (m)‡	MAX LENGTH ft. (m)‡	MAX FUSE** or CKT BRK AMPS
		MIN	MAX	RLA	LRA	FLA		60° C	75° C	60° C	75° C	
24–30	208/230	197	253	10.3	52.0	0.7	13.6	14.00	14.00	58 (17.7)	55 (16.8)	20
36–30	208/230			16.7	82.0	0.9	21.8	12.00	12.00	57 (17.4)	54 (16.5)	35
48–30	208/230			21.2	96.0	1.3	27.8	10.00	10.00	71 (21.6)	68 (20.7)	40
60–30	208/230			23.0	118.0	1.3	30.1	8.00	10.00	103 (31.4)	63 (19.2)	50

* Permissible limits of the voltage range at which the unit will operate satisfactorily

† If wire is applied at ambient greater than 30°C, consult table 310–16 of the NEC (NFPA 70). The ampacity of non–metallic–sheathed cable (NM), trade name ROMEX, shall be that of 60°C conditions, per the NEC (NFPA 70) Article 336–26. If other than uncoated (no–plated), 60 or 75°C insulation, copper wire (solid wire for 10 AWG or smaller, stranded wire for larger than 10 AWG) is used, consult applicable tables of the NEC (NFPA 70).

‡ Length shown is as measured one way along wire path between unit and service panel for voltage drop not to exceed 2%.

** Time–Delay fuse.

FLA – Full Load Amps
LRA – Locked Rotor Amps
MCA – Minimum Circuit Amps
RLA – Rated Load Amps

NOTE: Control circuit is 24–V on all units and requires external power source. Copper wire must be used from service disconnect to unit. All motors/compressors contain internal overload protection.

Complies with 2010 requirements of ASHRAE Standards 90.1

A-WEIGHTED SOUND POWER (dBA)

Unit Size – Voltage, Series	Standard Rating (dBA)	Typical Octave Band Spectrum (dBA, without tone adjustment)						
		125	250	500	1000	2000	4000	8000
24–30	70–low stage	56.5	58.5	65.0	64.5	61.0	57.0	50.5
	71–high stage	54.5	58.0	65.5	65.0	62.5	58.0	55.0
36–30	69–low stage	55.0	61.0	64.0	63.5	60.0	54.5	48.5
	71–high stage	53.5	60.5	64.5	66.0	60.0	55.5	52.0
48–30	72–low stage	54.5	63.5	65.5	66.0	60.5	57.5	51.5
	72–high stage	55.0	63.5	65.5	66.0	60.0	58.0	54.0
60–30	72–low stage	60.0	65.5	66.5	65.5	60.5	58.0	51.5
	72–high stage	60.0	63.5	64.5	65.0	60.0	57.5	52.0

NOTE: Tested in accordance with AHRI Standard 270–2008. (Not listed with AHRI).

CHARGING SUBCOOLING (TXV-TYPE EXPANSION DEVICE)

UNIT SIZE–VOLTAGE, SERIES	REQUIRED SUBCOOLING °F (°C)
24–30	8 (4.4)
36–30	13 (7.2)
48–30	11 (6.1)
60–30	12 (6.7)

ACCESSORY CONTROLS

PART NUMBER	DESCRIPTION
SYSTXCCUID01–V	Infinity Control Deluxe 7–Day Programmable (4–Wire User Interface w/ multiple functionality)
SYSTXCCUIZ01–V	Infinity Control Deluxe Zoning 7–Day Programmable (Wall–mounted control for a multi–zone system. w/ multiple functionality)
SYSTXCCUID01–B	Infinity Control Deluxe 7–Day Programmable (Wall–mounted system control.)
SYSTXCCUIZ01–B	Infinity Control Deluxe Zoning 7–Day Programmable (Wall–mounted control for a multi–zone system.)
SYSTXCC4ZC01	Infinity 4–Zone Damper Control Module (Wall–mounted control for a four–zone system.)
SYSTXCCSMS01	Infinity Smart Sensor (Optional wall control used to monitor temperature and/or fan control in an individual zone.)
SYSTXCCRRS01	Infinity Remote Room Sensor (Monitors temperature in an individual zone.)
SYSTXCCRCT01 or SYSTXCCRWF01	Infinity System Remote Access Module (Hardware for wireless access and control via internet.)
SYSTXCCNIM01	Infinity Network Interface Module (Connects Heat Recovery and Energy Recovery Ventilators on non–zoning applications.)

ACCESSORIES

ORDER NUMBER	DESCRIPTION	24–30	36–30	48–30	60–30
KSAHS2301AAA	HARD START KIT	X			
KSAHS2401AAA	HARD START KIT		X		
KSAHS2501AAA	HARD START KIT			X	
KSAHS2601AAA	HARD START KIT				X
KSASF0101AAA	SUPPORT FEET	X	X	X	X
KSATX0201PUR	TXV PURON HSO	X			
KSATX0301PUR	TXV PURON HSO		X		
KSATX0401PUR	TXV PURON HSO			X	
KSATX0501PUR	TXV PURON HSO				X

x = Accessory

ACCESSORY USAGE GUIDELINE

ACCESSORY	REQUIRED FOR LOW–AMBIENT COOLING APPLICATIONS (Below 55°F/12.8°C)	REQUIRED FOR LONG LINE APPLICATIONS*	REQUIRED FOR SEA COAST APPLICATIONS (Within 2 miles/3.22 km)
Compressor Start Assist Kit	No	Yes	No
Crankcase Heater	Yes (standard on some units)	Yes (standard on some units)	No
Evaporator Freeze Protection	Standard with Infinity Control	No	No
Liquid–Line Solenoid Valve	No	No	No
Low–Ambient Control	Standard with Infinity Control	No	No
Puron Refrigerant Balance Port Hard–ShutOff TXV	Yes†	Yes†	Yes†
Support Feet	Recommended	No	Recommended
Winter Start Control	Standard with Infinity Control	No	No

* For tubing set lengths between 80 and 200 ft. (24.38 and 60.96 m) horizontal or 35 ft. (10.7 m) vertical differential (total equivalent length), refer to the Long Line Guideline—Air Conditioners and Heat Pumps using Puron® Refrigerant.

† Required on all indoor units. Standard on all new Puron refrigerant fan coils and furnace coils.

Accessory Description and Usage (Listed Alphabetically)

1. Compressor Start Assist - Capacitor and Relay

Start capacitor and relay gives a ”hard” boost to compressor motor at each start up.

Usage Guideline:

Not required on this unit since compressor always starts unloaded.

Available if required by local codes.

2. Crankcase Heater

An electric resistance heater which mounts to the base of the compressor to keep the lubricant warm during off cycles. Improves compressor lubrication on restart and minimizes the chance of liquid slugging.

Usage Guideline:

Required in low ambient cooling applications.

Required in long line applications.

Suggested in all commercial applications.

3. Support Feet

Four stick-on plastic feet that raise the unit 4 in. (101.6 mm) above the mounting pad. This allows sand, dirt, and other debris to be flushed from the unit base, minimizing corrosion.

Usage Guideline:

Suggested in the following applications:

Coastal installations.

Windy areas or where debris is normally circulating.

Rooftop installations.

For improved sound ratings.

4. Thermostatic Expansion Valve (TXV)

A modulating flow-control valve which meters refrigerant liquid flow rate into the evaporator in response to the superheat of the refrigerant gas leaving the evaporator.

Kit includes valve, adapter tubes, and external equalizer tube. Hard shut off types are available.

NOTE: When using a hard shut off TXV with single phase reciprocating compressors, a Compressor Start Assist Capacitor and Relay is required.

Usage Guideline:

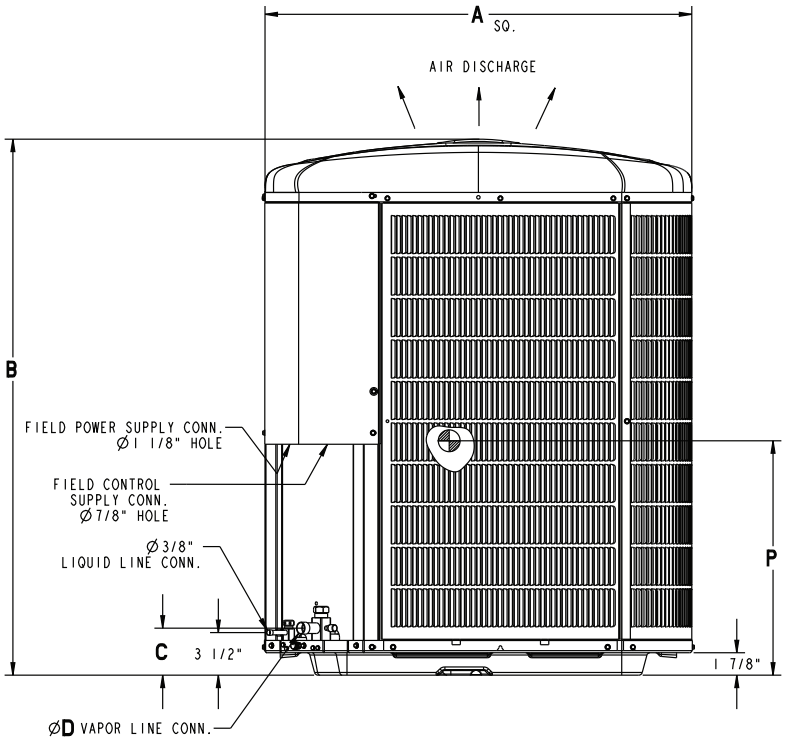
Required to achieve AHRI ratings in certain equipment combinations. Refer to combination ratings.

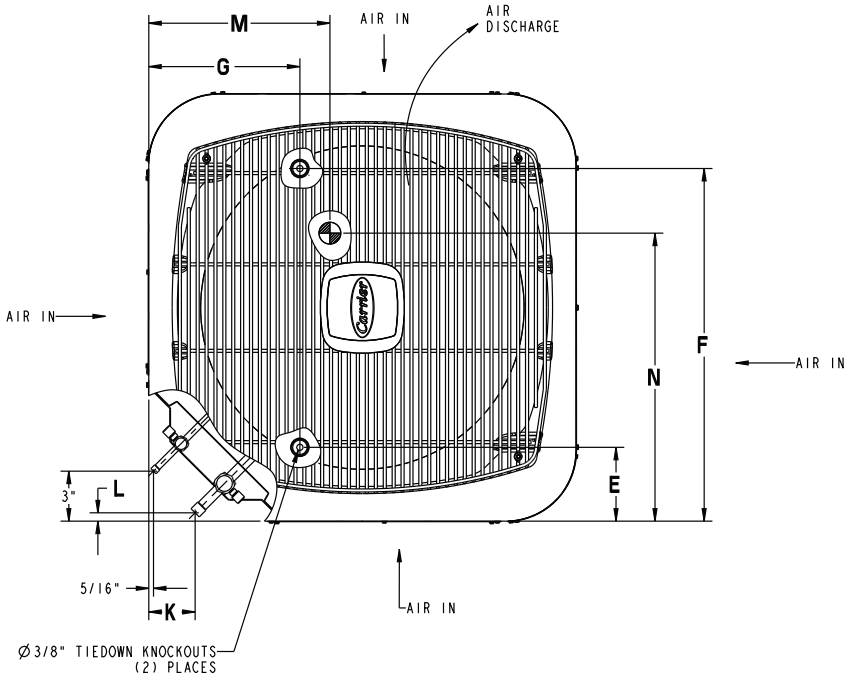
Hard shut off TXV or LLS required in air conditioner long line applications.

DIMENSIONS – ENGLISH

UNIT	SERIES	ELECTRICAL CHARACTERISTICS				A	B	C	D	E	F	G	K	L	M	N	P	OPERATING WEIGHT (lbs)	SHIPPING WEIGHT (lbs)	SHIPPING DIMENSIONS (L x W x H)
24ANB724C	0	X	0	0	0	31 3/16"	39 3/4"	3 3/4"	3/4"	6 9/16"	24 11/16"	9 1/8"	2 13/16"	1/2"	16 1/4"	15 3/4"	16 3/4"	223	274	32 5/16" X 35 1/2" X 46 1/8"
24ANB736C	0	X	0	0	0	31 3/16"	39 3/4"	3 7/8"	7/8"	6 9/16"	24 11/16"	9 1/8"	2 15/16"	5/8"	15 1/4"	16 1/4"	18"	274	309	32 5/16" X 35 1/2" X 46 1/8"
24ANB748C	0	X	0	0	0	35"	40 5/8"	3 7/8"	7/8"	6 9/16"	28 7/16"	9 1/8"	2 15/16"	5/8"	17 3/4"	16 1/2"	18 3/4"	298	341	36 1/8" X 39 1/4" X 46 1/8"
24ANB760C	0	X	0	0	0	35"	47 7/16"	3 7/8"	7/8"	6 9/16"	28 7/16"	9 1/8"	2 15/16"	5/8"	17 1/4"	16 3/4"	21"	351	397	36 1/8" X 39 1/4" X 49 9/16"
		208-230-1-60	230-1-60	208/230-3-60	460-3-60															

X = YES
O = NO





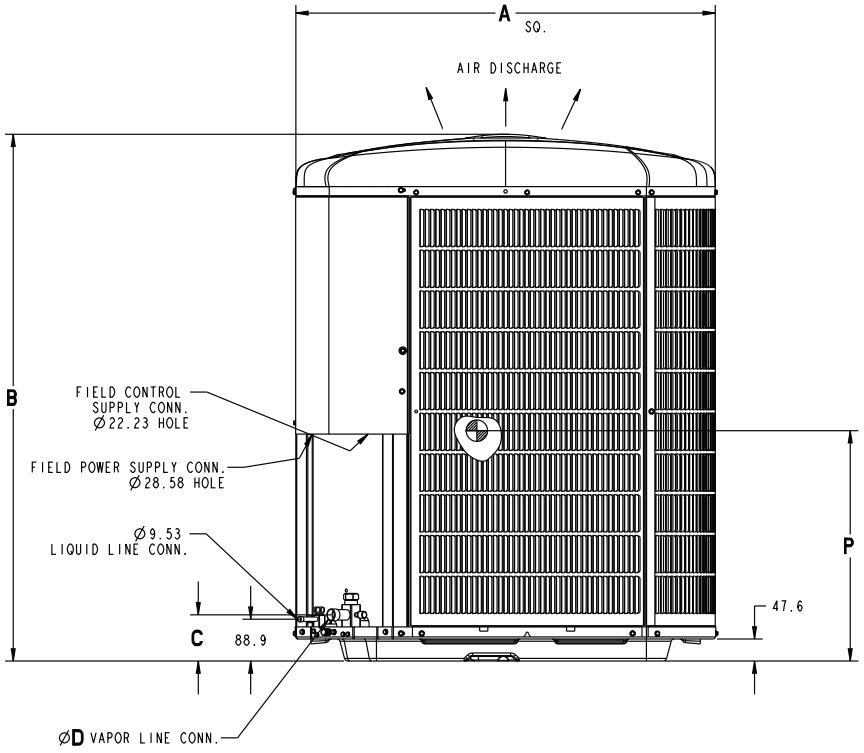
UNIT SIZE	MINIMUM MOUNTING PAD DIMENSIONS
24,36	31 1/2" X 31 1/2"
48,60	35" X 35"

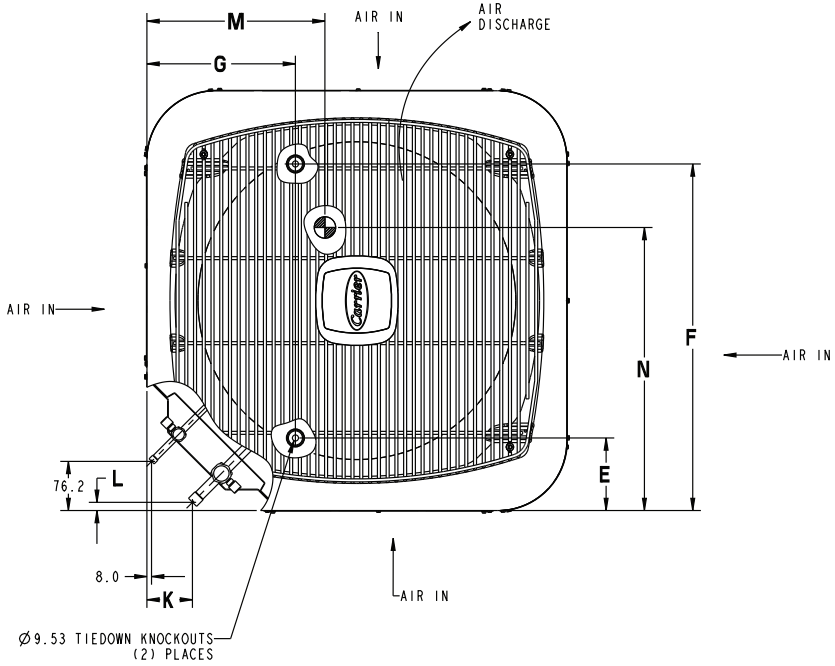
DIMENSIONS – SI

UNIT	SERIES	ELECTRICAL CHARACTERISTICS				A	B	C	D	E	F	G	K	L	M	N	P	OPERATING WEIGHT (Kgs)	SHIPPING WEIGHT (Kgs)	SHIPPING DIMENSIONS (L x W x H)
24ANB724C	0	X	O	O	O	792.5	1009.4	95.6	19.1	166.1	626.3	231.3	70.9	12.8	412.8	400.1	425.5	101	124	821.2 X 901.2 X 1172.2
24ANB736C	0	X	O	O	O	792.5	1009.4	97.9	22.2	166.1	626.3	231.3	74.5	16.3	387.4	412.8	457.2	124	140	821.2 X 901.2 X 1172.2
24ANB748C	0	X	O	O	O	889.0	1032.5	97.9	22.2	166.1	722.8	231.3	74.5	16.3	450.9	419.1	476.3	135	155	917.7 X 997.7 X 1172.2
24ANB760C	0	X	O	O	O	889.0	1205.3	97.9	22.2	166.1	722.8	231.3	74.5	16.3	438.2	425.5	533.4	159	180	917.7 X 997.7 X 1315.7

208-230-1-60	230-1-60	208/230-3-60	460-3-60

X = YES
O = NO

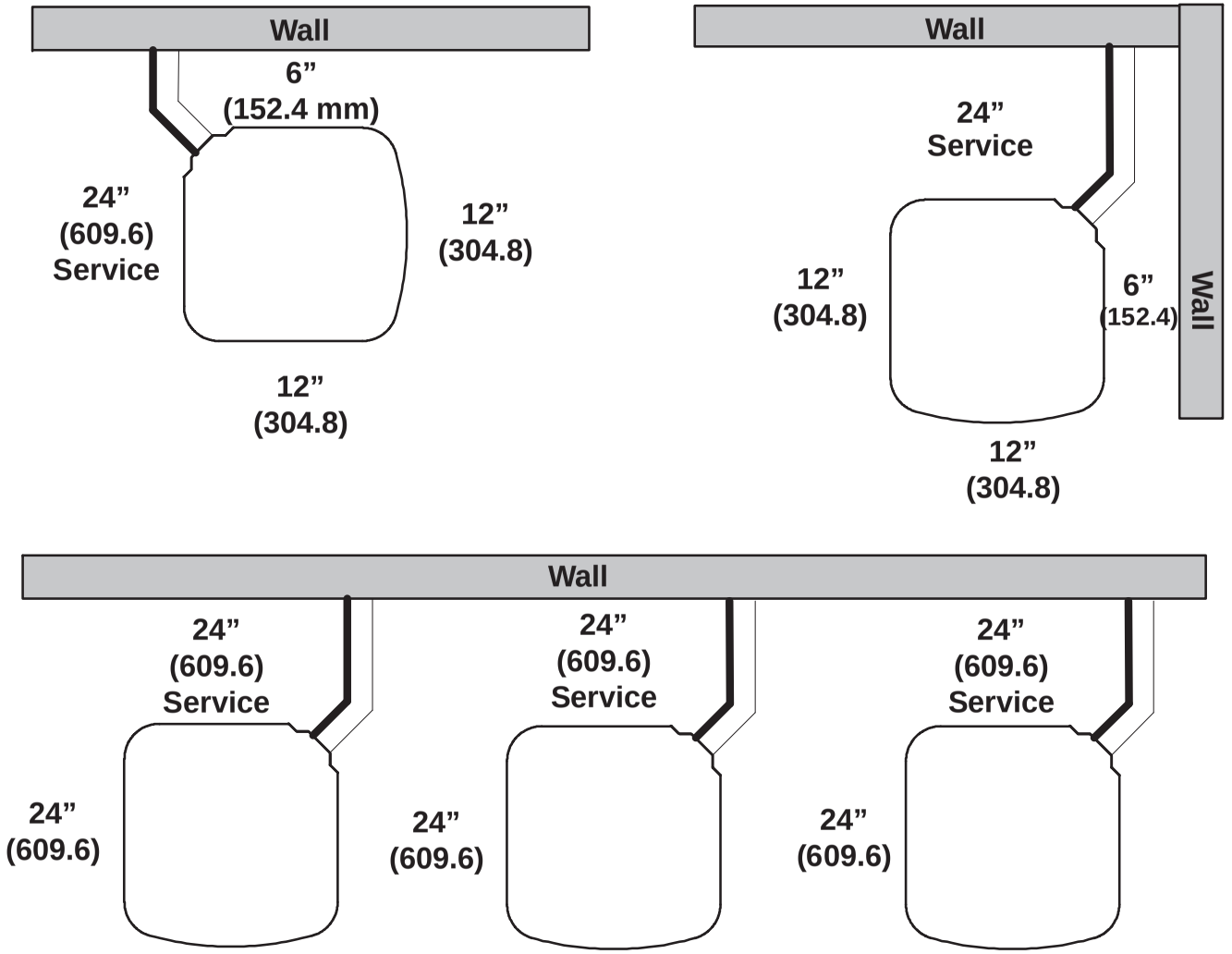




UNIT SIZE	MINIMUM MOUNTING PAD DIMENSIONS
24,36	800.1 X 800.1
48,60	889.0 X 889.0

CLEARANCES

Clearances (various examples)



Note: Numbers in ( ) = mm

IMPORTANT: When installing multiple units in an alcove, roof well, or partially enclosed area, ensure there is adequate ventilation to prevent re-circulation of discharge air.

A07833

TESTED AHRI COMBINATION RATINGS

NOTE: Ratings contained in this document are subject to change at any time.

For AHRI ratings certificates, please refer to the AHRI directory www.ahridirectory.org
Additional ratings and system combinations can be accessed via the Carrier database at:
http://cactaxcredits.info/carrier-ratings/ac_ratings_srch.php
Equipment performance calculator can be accessed at: http://rpmob.wrightsoft.com/

Model Number	Indoor Coil Model Number	Furnace Model Number	AHRI Standard Ratings – Cooling				
			Cooling Capacity	EER	SEER	ID CFM	
						High	Low
24ANB724C**30	CNPV*4217A**	58PH*045–08	24,800	13.1	16.0	715	585
24ANB736C**30	FV4CNB006		37,200	13.7	17.7	1050	840
24ANB748C**30	CAP**4817A**+TDR		48,000	12.5	14.5	1400	1120
24ANB760C**30	CNPH*6124A**	58PH*110–20	58,000	13.0	16.5	1675	1245

***** AHRI = Air Conditioning, Heating & Refrigeration Institute
EER — Energy Efficiency Ratio
SEER — Seasonal Energy Efficiency Ratio
TDR — Time–Delay Relay. In most cases, only 1 method should be used to achieve TDR function. Using more than 1 method in a system may cause degradation in performance. Use either the accessory Time–Delay Relay KAATD0101TDR or a furnace equipped with TDR. Most Carrier furnaces are equipped with TDR.

NOTES:
1. Ratings are net values reflecting the effects of circulating fan motor heat. Supplemental electric heat is not included.
2. Tested outdoor/indoor combinations have been tested in accordance with DOE test procedures for central air conditioners. Ratings for other combinations are determined under DOE computer simulation procedures.
3. Determine actual CFM values obtainable for your system by referring to fan performance data in fan coil or furnace coil literature.
4. Do not apply with capillary tube coils as performance and reliability are affected.

DETAILED COOLING CAPACITIES#

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
CFM	EWB °F (°C)	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**
		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡	
24ANB724C**30 Outdoor Section With CNPVP4217 Indoor Section – HIGH																			
600	57 (13.9)	22.74	22.74	1.53	22.01	22.01	1.69	21.22	21.22	1.86	20.36	20.36	2.04	19.42	19.42	2.25	18.39	18.39	2.48
	62 (16.7)	24.16	20.32	1.54	23.17	19.64	1.69	22.12	18.95	1.86	20.99	18.24	2.05	19.77	17.52	2.25	18.48	18.30	2.48
	63 (17.2)††	24.67	16.79	1.54	23.66	16.15	1.70	22.58	15.49	1.87	21.42	14.81	2.05	20.17	14.12	2.25	18.82	13.42	2.48
	67 (19.4)	26.67	17.43	1.56	25.58	16.77	1.71	24.42	16.11	1.88	23.17	15.43	2.07	21.86	14.74	2.24	20.41	14.03	2.46
	72 (22.2)	29.46	14.49	1.58	28.27	13.87	1.73	27.00	13.23	1.90	25.64	12.58	2.09	24.17	11.92	2.29	22.61	11.26	2.52
715	57 (13.9)	24.28	24.28	1.56	23.47	23.47	1.72	22.59	22.59	1.89	21.63	21.63	2.07	20.60	20.60	2.28	19.47	19.47	2.51
	62 (16.7)	25.09	22.44	1.57	24.02	21.72	1.72	22.91	20.99	1.89	21.73	20.23	2.07	20.63	20.63	2.28	19.50	19.50	2.51
	63 (17.2)††	25.58	18.25	1.57	24.48	17.57	1.73	23.32	16.88	1.89	22.08	16.18	2.08	20.75	15.46	2.28	19.32	14.73	2.51
	67 (19.4)	27.63	18.98	1.59	26.44	18.29	1.74	25.20	17.60	1.91	23.86	16.89	2.09	22.44	16.17	2.30	20.92	15.44	2.53
	72 (22.2)	30.50	15.49	1.61	29.21	14.84	1.76	27.84	14.18	1.93	26.39	13.51	2.12	24.83	12.82	2.32	23.18	12.13	2.55
750	57 (13.9)	24.69	24.69	1.57	23.85	23.85	1.73	22.95	22.95	1.90	21.97	21.97	2.08	20.91	20.91	2.29	19.76	19.76	2.52
	62 (16.7)	25.32	23.06	1.57	24.25	22.33	1.73	23.12	21.58	1.90	22.01	22.01	2.08	20.94	20.94	2.29	19.79	19.79	2.52
	63 (17.2)††	25.80	18.68	1.58	24.68	17.99	1.74	23.50	17.29	1.90	22.24	16.58	2.09	20.89	15.85	2.29	19.44	15.11	2.52
	67 (19.4)	27.86	19.44	1.59	26.66	18.74	1.75	25.39	18.04	1.92	24.03	17.32	2.10	22.59	16.59	2.31	21.05	15.85	2.53
	72 (22.2)	30.75	15.78	1.62	29.44	15.12	1.77	28.05	14.45	1.94	26.57	13.78	2.12	24.99	13.08	2.33	23.32	12.38	2.56
800	57 (13.9)	25.24	25.24	1.58	24.37	24.37	1.74	23.43	23.43	1.91	22.42	22.42	2.10	21.32	21.32	2.30	20.13	20.13	2.53
	62 (16.7)	25.64	23.93	1.59	24.55	23.18	1.74	23.47	23.47	1.91	22.45	22.45	2.10	21.35	21.35	2.30	20.16	20.16	2.53
	63 (17.2)††	26.09	19.27	1.59	24.94	18.57	1.75	23.73	17.86	1.91	22.44	17.14	2.10	21.07	16.41	2.30	19.62	15.66	2.49
	67 (19.4)	28.16	20.08	1.61	26.93	19.37	1.76	25.62	18.66	1.93	24.25	17.93	2.11	22.77	17.19	2.32	21.21	16.44	2.54
	72 (22.2)	31.07	16.19	1.63	29.73	15.52	1.78	28.30	14.84	1.95	26.80	14.15	2.14	25.19	13.45	2.34	23.48	12.75	2.57

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
CFM	EWB °F (°C)	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**
		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡	
24ANB724C**30 Outdoor Section With CNPVP4217 Indoor Section – LOW																			
450	57 (13.9)	16.09	16.09	1.00	15.51	15.51	1.16	14.87	14.87	1.35	14.19	14.19	1.56	13.44	13.44	1.81	12.64	12.64	2.11
	62 (16.7)	17.22	13.77	1.01	16.42	13.42	1.17	15.57	13.04	1.35	14.65	12.64	1.56	13.67	12.23	1.81	12.66	12.66	2.11
	63 (17.2)††	17.64	11.41	1.01	16.83	11.06	1.17	15.95	10.68	1.35	15.00	10.28	1.57	14.00	9.87	1.81	12.92	9.42	2.11
	67 (19.4)	19.26	11.92	1.02	18.39	11.56	1.18	17.45	11.19	1.36	16.44	10.79	1.57	15.36	10.37	1.82	14.20	9.93	2.12
	72 (22.2)	21.55	10.03	1.04	20.59	9.68	1.19	19.56	9.30	1.37	18.46	8.90	1.58	17.28	8.49	1.83	16.01	8.05	2.13
500	57 (13.9)	16.84	16.84	1.01	16.22	16.22	1.17	15.54	15.54	1.36	14.81	14.81	1.57	14.01	14.01	1.83	13.16	13.16	2.12
	62 (16.7)	17.70	14.66	1.02	16.87	14.29	1.18	15.97	13.91	1.36	15.02	13.50	1.57	14.05	14.05	1.82	13.19	13.19	2.12
	63 (17.2)††	18.12	12.03	1.02	17.27	11.67	1.18	16.35	11.28	1.36	15.37	10.88	1.57	14.31	10.45	1.82	13.19	10.00	2.12
	67 (19.4)	19.79	12.59	1.03	18.86	12.22	1.19	17.88	11.83	1.37	16.82	11.42	1.58	15.70	11.00	1.83	14.48	10.55	2.13
	72 (22.2)	22.13	10.48	1.05	21.12	10.11	1.20	20.04	9.72	1.38	18.88	9.32	1.59	17.65	8.89	1.84	16.33	8.45	2.13
585	57 (13.9)	17.96	17.96	1.03	17.27	17.27	1.19	16.53	16.53	1.37	15.73	15.73	1.59	14.86	14.86	1.84	13.93	13.93	2.14
	62 (16.7)	18.37	16.12	1.03	17.49	15.74	1.19	16.57	16.53	1.37	15.76	15.76	1.59	14.89	14.89	1.84	13.95	13.95	2.14
	63 (17.2)††	18.78	13.04	1.04	17.86	12.67	1.20	16.89	12.27	1.38	15.84	11.85	1.59	14.73	11.41	1.84	13.54	10.94	2.13
	67 (19.4)	20.49	13.67	1.05	19.50	13.29	1.20	18.45	12.89	1.38	17.33	12.47	1.59	16.14	12.02	1.84	14.87	11.56	2.14
	72 (22.2)	22.90	11.19	1.06	21.82	10.81	1.22	20.67	10.41	1.40	19.44	9.99	1.61	18.14	9.55	1.85	16.74	9.09	2.15
640	57 (13.9)	18.58	18.58	1.04	17.86	17.86	1.20	17.08	17.08	1.38	16.24	16.24	1.60	15.33	15.33	1.85	14.35	14.35	2.14
	62 (16.7)	18.75	17.02	1.04	17.89	17.89	1.20	17.11	17.11	1.38	16.27	16.27	1.60	15.36	15.36	1.85	14.38	14.38	2.14
	63 (17.2)††	19.12	13.67	1.05	18.17	13.29	1.20	17.16	12.88	1.38	16.09	12.45	1.60	14.94	12.01	1.84	13.73	11.53	2.14
	67 (19.4)	20.85	14.34	1.06	19.83	13.95	1.21	18.74	13.55	1.39	17.59	13.12	1.60	16.36	12.67	1.85	15.06	12.20	2.15
	72 (22.2)	23.29	11.62	1.07	22.18	11.23	1.23	20.99	10.83	1.41	19.72	10.41	1.62	18.38	9.96	1.86	16.95	9.49	2.16

See notes on page 15

DETAILED COOLING CAPACITIES# CONTINUED

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
CFM	EWB °F (°C)	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**
		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡	
24ANB736C**30 Outdoor Section With FV4CNB006 Indoor Section																			
900	57 (13.9)	33.82	33.82	2.17	32.59	32.59	2.40	31.29	31.29	2.64	29.91	29.91	2.90	28.45	28.45	3.19	26.87	26.87	3.51
	62 (16.7)	36.00	31.08	2.19	34.36	30.28	2.41	32.64	29.45	2.65	30.83	28.58	2.91	28.95	27.69	3.20	26.98	26.83	3.52
	63 (17.2)††	36.79	25.72	2.20	35.11	24.92	2.42	33.35	24.09	2.66	31.49	23.24	2.92	29.55	22.36	3.20	27.48	21.44	3.52
	67 (19.4)	39.85	26.73	2.22	38.05	25.93	2.45	36.15	25.10	2.69	34.16	24.25	2.95	32.06	23.36	3.23	29.82	22.44	3.55
	72 (22.2)	44.03	22.25	2.26	42.06	21.45	2.49	39.98	20.63	2.73	37.81	19.79	2.99	35.52	18.91	3.28	33.05	17.99	3.60
975	57 (13.9)	34.90	34.90	2.19	33.61	33.61	2.42	32.25	32.25	2.66	30.81	30.81	2.92	29.28	29.28	3.21	27.62	27.62	3.53
	62 (16.7)	36.67	32.52	2.21	34.98	31.70	2.43	33.20	30.85	2.67	31.35	29.96	2.92	29.45	29.02	3.21	27.67	27.67	3.53
	63 (17.2)††	37.47	26.73	2.21	35.73	25.91	2.44	33.90	25.07	2.67	31.99	24.21	2.93	29.98	23.31	3.22	27.86	22.38	3.54
	67 (19.4)	40.55	27.80	2.24	38.68	26.98	2.46	36.71	26.14	2.70	34.67	25.28	2.96	32.49	24.37	3.25	30.19	23.44	3.57
	72 (22.2)	44.77	22.95	2.28	42.73	22.13	2.50	40.59	21.30	2.74	38.35	20.44	3.00	35.98	19.55	3.29	33.45	18.62	3.61
1050	57 (13.9)	35.89	35.89	2.21	34.54	34.54	2.43	33.12	33.12	2.67	31.61	31.61	2.94	30.02	30.02	3.23	28.29	28.29	3.55
	62 (16.7)	37.27	33.93	2.22	35.53	33.09	2.44	33.71	32.22	2.68	31.84	31.29	2.94	30.07	30.07	3.23	28.34	28.34	3.55
	63 (17.2)††	38.05	27.71	2.23	36.25	26.88	2.45	34.38	26.03	2.69	32.41	25.15	2.95	30.36	24.24	3.23	28.17	23.29	3.55
	67 (19.4)	41.15	28.84	2.26	39.22	28.01	2.48	37.20	27.16	2.72	35.09	26.28	2.98	32.87	25.37	3.26	30.52	24.42	3.58
	72 (22.2)	45.41	23.60	2.30	43.31	22.79	2.52	41.11	21.94	2.76	38.81	21.08	3.02	36.37	20.18	3.31	33.78	19.23	3.63
1200	57 (13.9)	37.63	37.63	2.24	36.17	36.17	2.47	34.64	34.64	2.71	33.02	33.02	2.97	31.30	31.30	3.26	29.44	29.44	3.59
	62 (16.7)	38.29	36.63	2.25	36.50	35.72	2.47	34.70	34.70	2.71	33.07	33.07	2.97	31.34	31.34	3.26	29.48	29.48	3.59
	63 (17.2)††	39.02	29.60	2.26	37.12	28.75	2.48	35.15	27.87	2.71	33.10	26.97	2.97	30.94	26.03	3.26	28.68	25.06	3.57
	67 (19.4)	42.13	30.85	2.28	40.10	30.00	2.51	37.99	29.13	2.74	35.79	28.23	3.00	33.47	27.30	3.29	31.03	26.32	3.61
	72 (22.2)	46.45	24.88	2.33	44.24	24.04	2.55	41.94	23.18	2.78	39.54	22.30	3.05	37.00	21.38	3.33	34.30	20.42	3.65
1350	57 (13.9)	39.10	39.10	2.28	37.54	37.54	2.50	35.91	35.91	2.74	34.19	34.19	3.00	32.36	32.36	3.29	30.39	30.39	3.62
	62 (16.7)	39.22	39.06	2.28	37.60	37.60	2.50	35.97	35.97	2.74	34.24	34.24	3.00	32.40	32.40	3.29	30.43	30.43	3.62
	63 (17.2)††	39.75	31.41	2.28	37.78	30.54	2.50	35.75	29.64	2.74	33.62	28.72	3.00	31.40	27.76	3.28	29.09	26.75	3.60
	67 (19.4)	42.88	32.79	2.31	40.78	31.92	2.53	38.60	31.03	2.77	36.33	30.12	3.03	33.94	29.16	3.31	31.43	28.15	3.63
	72 (22.2)	47.24	26.09	2.35	44.96	25.25	2.57	42.58	24.38	2.81	40.09	23.48	3.07	37.47	22.54	3.36	34.70	21.57	3.68

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
CFM	EWB °F (°C)	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**
		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡	
24ANB736C**30 Outdoor Section With FV4CNB006 Indoor Section																			
720	57 (13.9)	25.24	25.24	1.40	22.73	22.73	1.61	20.30	20.30	1.83	17.96	17.96	2.10	15.72	15.72	2.40	13.58	13.58	2.76
	62 (16.7)	26.24	23.93	1.39	23.34	21.89	1.60	20.59	19.91	1.83	18.01	17.97	2.10	15.75	15.75	2.40	13.60	13.60	2.76
	63 (17.2)††	26.80	19.56	1.39	23.83	17.77	1.60	20.99	16.06	1.83	18.30	14.42	2.09	15.75	12.84	2.40	13.35	11.34	2.77
	67 (19.4)	29.24	20.46	1.38	26.01	18.62	1.58	22.93	16.85	1.81	20.00	15.15	2.07	17.23	13.52	2.37	14.62	11.97	2.73
	72 (22.2)	32.65	16.92	1.37	29.07	15.28	1.57	25.65	13.72	1.79	22.40	12.23	2.04	19.33	10.82	2.33	16.42	9.48	2.68
780	57 (13.9)	26.05	26.05	1.40	23.43	23.43	1.60	20.91	20.91	1.83	18.49	18.49	2.09	16.17	16.17	2.40	13.95	13.95	2.75
	62 (16.7)	26.73	25.11	1.40	23.77	22.98	1.60	20.99	20.88	1.83	18.52	18.52	2.09	16.20	16.20	2.40	13.98	13.98	2.75
	63 (17.2)††	27.28	20.39	1.39	24.23	18.54	1.60	21.32	16.76	1.83	18.57	15.06	2.09	15.97	13.44	2.40	13.52	11.88	2.77
	67 (19.4)	29.75	21.35	1.38	26.44	19.44	1.59	23.28	17.60	1.81	20.29	15.84	2.07	17.46	14.16	2.37	14.81	12.55	2.73
	72 (22.2)	33.21	17.50	1.37	29.53	15.82	1.57	26.03	14.21	1.79	22.71	12.68	2.04	19.57	11.23	2.34	16.61	9.86	2.68
840	57 (13.9)	26.78	26.78	1.40	24.08	24.08	1.61	21.47	21.47	1.83	18.97	18.97	2.09	16.58	16.58	2.39	14.29	14.29	2.75
	62 (16.7)	27.19	26.25	1.40	24.19	24.01	1.60	21.51	21.51	1.83	19.01	19.01	2.09	16.61	16.61	2.39	14.31	14.31	2.75
	63 (17.2)††	27.69	21.19	1.40	24.58	19.29	1.60	21.61	17.45	1.83	18.80	15.70	2.10	16.16	14.02	2.40	13.67	12.41	2.77
	67 (19.4)	30.19	22.21	1.39	26.81	20.24	1.59	23.59	18.35	1.81	20.54	16.53	2.07	17.66	14.79	2.37	14.97	13.12	2.73
	72 (22.2)	33.68	18.06	1.38	29.92	16.34	1.57	26.36	14.69	1.79	22.98	13.12	2.04	19.78	11.65	2.34	16.78	10.21	2.68
960	57 (13.9)	28.10	28.10	1.41	25.23	25.23	1.61	22.47	22.47	1.83	19.82	19.82	2.09	17.29	17.29	2.39	14.88	14.88	2.74
	62 (16.7)	28.15	28.15	1.41	25.28	25.28	1.61	22.51	22.51	1.83	19.85	19.85	2.09	17.32	17.32	2.39	14.90	14.90	2.74
	63 (17.2)††	28.38	22.76	1.40	25.15	20.74	1.61	22.09	18.80	1.84	19.19	16.93	2.10	16.48	15.14	2.41	13.94	13.42	2.77
	67 (19.4)	30.91	23.89	1.40	27.41	21.80	1.60	24.09	19.79	1.82	20.95	17.86	2.08	18.00	16.01	2.38	15.24	14.22	2.73
	72 (22.2)	34.46	19.14	1.39	30.57	17.34	1.58	26.89	15.61	1.80	23.40	13.97	2.05	20.12	12.41	2.34	17.04	10.92	2.69
1080	57 (13.9)	29.23	29.23	1.41	26.21	26.21	1.61	23.31	23.31	1.83	20.54	20.54	2.09	17.89	17.89	2.39	15.37	15.37	2.74
	62 (16.7)	29.28	29.28	1.41	26.26	26.26	1.61	23.35	23.35	1.83	20.57	20.57	2.09	17.92	17.92	2.39	15.39	15.39	2.74
	63 (17.2)††	28.93	24.27	1.41	25.62	22.14	1.62	22.48	20.09	1.84	19.52	18.12	2.11	16.76	16.20	2.41	14.23	14.23	2.77
	67 (19.4)	31.48	25.51	1.40	27.89	23.31	1.60	24.48	21.19	1.83	21.28	19.15	2.08	18.27	17.18	2.38	15.48	15.25	2.73
	72 (22.2)	35.07	20.17	1.39	31.07	18.29	1.59	27.30	16.50	1.81	23.73	14.79	2.05	20.38	13.16	2.35	17.23	11.60	2.69

See notes on page 15

DETAILED COOLING CAPACITIES# CONTINUED

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
CFM	EWB °F (°C)	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**
		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡	
24ANB748C**30 Outdoor Section With CNPH*6124** Indoor Section — HGIH																			
1200	57 (13.9)	44.24	44.24	3.05	42.90	42.90	3.32	41.40	41.40	3.61	39.74	39.74	3.92	37.90	37.90	4.27	35.83	35.83	4.65
	62 (16.7)	47.01	40.52	3.08	45.17	39.70	3.34	43.18	38.81	3.63	41.00	37.85	3.93	38.63	36.78	4.28	36.06	35.57	4.65
	63 (17.2)††	48.01	33.38	3.08	46.12	32.54	3.35	44.08	31.63	3.63	41.83	30.65	3.94	39.37	29.58	4.28	36.64	28.42	4.66
	67 (19.4)	52.01	34.70	3.12	49.96	33.85	3.38	47.77	32.95	3.67	45.34	31.97	3.98	42.67	30.90	4.32	39.73	29.74	4.70
	72 (22.2)	57.54	28.76	3.16	55.28	27.89	3.43	52.84	26.96	3.71	50.18	25.96	4.02	47.25	24.88	4.37	44.00	23.69	4.75
1300	57 (13.9)	45.59	45.59	3.10	44.16	44.16	3.36	42.59	42.59	3.65	40.85	40.85	3.96	38.91	38.91	4.31	36.74	36.74	4.69
	62 (16.7)	47.81	42.31	3.11	45.90	41.48	3.38	43.86	40.58	3.66	41.63	39.58	3.97	39.23	38.47	4.31	36.79	36.79	4.69
	63 (17.2)††	48.79	34.60	3.12	46.83	33.75	3.38	44.71	32.83	3.67	42.39	31.83	3.98	39.85	30.75	4.32	37.05	29.58	4.70
	67 (19.4)	52.83	36.01	3.16	50.71	35.14	3.42	48.44	34.23	3.70	45.91	33.23	4.01	43.18	32.15	4.35	40.14	30.97	4.73
	72 (22.2)	58.42	29.58	3.20	56.08	28.70	3.47	53.55	27.76	3.75	50.72	26.71	4.06	47.78	25.64	4.41	44.44	24.44	4.78
1400	57 (13.9)	46.80	46.80	3.14	45.30	45.30	3.40	43.66	43.66	3.69	41.83	41.83	4.01	39.82	39.82	4.35	37.55	37.55	4.73
	62 (16.7)	48.51	44.05	3.15	46.56	43.20	3.41	44.47	42.27	3.70	42.21	41.23	4.01	39.88	39.88	4.35	37.61	37.61	4.73
	63 (17.2)††	49.46	35.79	3.16	47.43	34.91	3.42	45.25	33.98	3.71	42.87	32.98	4.02	40.25	31.89	4.35	37.39	30.70	4.73
	67 (19.4)	53.53	37.27	3.19	51.34	36.40	3.45	49.00	35.48	3.74	46.30	34.42	4.05	43.59	33.37	4.39	40.49	32.18	4.77
	72 (22.2)	59.18	30.37	3.24	56.75	29.47	3.50	54.15	28.52	3.79	51.15	27.43	4.10	48.22	26.38	4.44	44.81	25.17	4.82
1600	57 (13.9)	48.91	48.91	3.22	47.28	47.28	3.48	45.51	45.51	3.77	43.54	43.54	4.09	41.37	41.37	4.43	38.93	38.93	4.81
	62 (16.7)	49.73	47.36	3.23	47.72	46.44	3.49	45.63	45.38	3.77	43.61	43.61	4.09	41.43	41.43	4.43	38.98	38.98	4.81
	63 (17.2)††	50.52	38.04	3.23	48.39	37.15	3.49	46.11	36.21	3.78	43.61	35.18	4.08	40.91	34.08	4.42	37.94	32.86	4.80
	67 (19.4)	54.65	39.69	3.27	52.34	38.80	3.53	49.87	37.86	3.81	47.19	36.84	4.12	44.26	35.73	4.46	41.05	34.52	4.84
	72 (22.2)	60.37	31.86	3.32	57.84	30.95	3.58	55.10	29.97	3.86	52.13	28.92	4.17	48.92	27.80	4.51	45.36	26.57	4.89
1800	57 (13.9)	50.69	50.69	3.30	48.94	48.94	3.56	47.06	47.06	3.85	44.96	44.96	4.16	42.64	42.64	4.51	40.06	40.06	4.89
	62 (16.7)	50.87	50.38	3.30	49.01	49.01	3.56	47.13	47.13	3.85	45.02	45.02	4.16	42.70	42.70	4.51	40.10	40.10	4.89
	63 (17.2)††	51.34	40.19	3.30	49.12	39.29	3.56	46.77	38.34	3.85	44.20	37.30	4.15	41.40	36.16	4.49	38.36	34.91	4.87
	67 (19.4)	55.49	42.00	3.34	53.13	41.12	3.60	50.48	40.13	3.88	47.77	39.12	4.19	44.74	37.98	4.53	41.46	36.75	4.91
	72 (22.2)	61.28	33.26	3.39	58.64	32.33	3.65	55.80	31.34	3.93	52.73	30.28	4.24	49.37	29.13	4.58	45.74	27.90	4.96

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
CFM	EWB °F (°C)	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**
		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡	
24ANB748C**30 Outdoor Section With CNPH*6124** Indoor Section — LOW																			
960	57 (13.9)	33.76	33.76	2.02	31.12	31.12	2.27	28.49	28.49	2.54	25.87	25.87	2.85	23.27	23.27	3.20	20.69	20.69	3.61
	62 (16.7)	35.22	31.85	2.02	32.16	29.71	2.26	29.13	27.59	2.53	26.15	25.48	2.84	23.31	23.31	3.20	20.72	20.72	3.61
	63 (17.2)††	35.99	26.01	2.01	32.84	24.14	2.26	29.72	22.29	2.53	26.63	20.47	2.84	23.59	18.68	3.19	20.61	16.92	3.61
	67 (19.4)	39.32	27.23	2.00	35.89	25.30	2.24	32.49	23.39	2.51	29.14	21.51	2.81	25.84	19.66	3.16	22.60	17.85	3.57
	72 (22.2)	43.93	22.52	1.99	40.11	20.79	2.22	36.34	19.08	2.48	32.60	17.41	2.77	28.93	15.77	3.11	25.33	14.17	3.51
1040	57 (13.9)	34.83	34.83	2.03	32.08	32.08	2.28	29.34	29.34	2.55	26.63	26.63	2.85	23.93	23.93	3.20	21.25	21.25	3.61
	62 (16.7)	35.87	33.37	2.03	32.73	31.14	2.27	29.65	28.92	2.54	26.67	26.67	2.85	23.97	23.97	3.20	21.29	21.29	3.61
	63 (17.2)††	36.60	27.06	2.03	33.36	25.13	2.27	30.17	23.22	2.54	27.01	21.34	2.85	23.91	19.49	3.20	20.86	17.68	3.62
	67 (19.4)	39.97	28.36	2.02	36.45	26.36	2.25	32.98	24.39	2.52	29.55	22.45	2.82	26.18	20.54	3.17	22.87	18.66	3.58
	72 (22.2)	44.63	23.24	2.00	40.72	21.46	2.24	36.83	19.71	2.49	33.03	18.00	2.79	29.28	16.32	3.13	25.60	14.67	3.52
1120	57 (13.9)	35.80	35.80	2.05	32.96	32.96	2.29	30.13	30.13	2.56	27.32	27.32	2.86	24.53	24.53	3.21	21.76	21.76	3.61
	62 (16.7)	36.46	34.83	2.04	33.28	32.51	2.29	30.18	30.18	2.56	27.36	27.36	2.86	24.57	24.57	3.21	21.80	21.80	3.61
	63 (17.2)††	37.12	28.08	2.04	33.82	26.09	2.28	30.56	24.13	2.55	27.34	22.19	2.86	24.18	20.29	3.22	21.09	18.42	3.63
	67 (19.4)	40.53	29.45	2.03	36.94	27.40	2.27	33.39	25.36	2.53	29.89	23.36	2.83	26.46	21.40	3.18	23.10	19.46	3.59
	72 (22.2)	45.23	23.93	2.02	41.22	22.11	2.25	37.27	20.32	2.51	33.40	18.57	2.80	29.57	16.85	3.14	25.83	15.16	3.53
1280	57 (13.9)	37.52	37.52	2.07	34.50	34.50	2.31	31.50	31.50	2.58	28.52	28.52	2.88	25.56	25.56	3.22	22.64	22.64	3.62
	62 (16.7)	37.62	37.50	2.07	34.56	34.56	2.31	31.55	31.55	2.58	28.56	28.56	2.88	25.60	25.60	3.22	22.67	22.67	3.62
	63 (17.2)††	37.99	30.05	2.07	34.57	27.95	2.31	31.21	25.88	2.58	27.89	23.84	2.88	24.64	21.82	3.24	21.47	19.84	3.65
	67 (19.4)	41.45	31.57	2.06	37.73	29.40	2.30	34.06	27.25	2.56	30.46	25.14	2.86	26.92	23.05	3.20	23.48	21.01	3.61
	72 (22.2)	46.20	25.24	2.05	42.06	23.35	2.28	37.97	21.48	2.53	33.95	19.65	2.82	30.03	17.87	3.16	26.18	16.11	3.56
1440	57 (13.9)	38.99	38.99	2.10	35.81	35.81	2.34	32.65	32.65	2.60	29.52	29.52	2.90	26.43	26.43	3.24	23.37	23.37	3.64
	62 (16.7)	39.05	39.05	2.10	35.86	35.86	2.34	32.70	32.70	2.60	29.57	29.57	2.90	26.47	26.47	3.24	23.40	23.40	3.64
	63 (17.2)††	38.68	31.94	2.10	35.17	29.73	2.34	31.71	27.56	2.61	28.32	25.41	2.91	25.01	23.28	3.26	21.80	21.16	3.67
	67 (19.4)	42.16	33.60	2.09	38.35	31.32	2.33	34.59	29.06	2.59	30.90	26.84	2.88	27.30	24.64	3.23	23.78	22.46	3.63
	72 (22.2)	46.94	26.50	2.08	42.68	24.53	2.31	38.50	22.60	2.56	34.39	20.70	2.85	30.37	18.84	3.19	26.43	17.02	3.58

See notes on page 15

DETAILED COOLING CAPACITIES# CONTINUED

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
CFM	EWB °F (°C)	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**
		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡	
24ANB760C**30 Outdoor Section With CNPH*6124A** Indoor Section – HIGH																			
1500	57 (13.9)	52.75	52.75	3.58	51.54	51.54	3.93	50.11	50.11	4.31	48.43	48.43	4.72	46.45	46.45	5.17	44.13	44.13	5.66
	62 (16.7)	55.58	48.38	3.61	53.83	47.84	3.96	51.86	47.19	4.33	49.60	46.41	4.73	47.03	45.46	5.17	44.17	44.17	5.66
	63 (17.2)††	56.71	39.71	3.62	54.90	39.06	3.97	52.85	38.31	4.34	50.49	37.43	4.74	47.78	36.42	5.18	44.71	35.27	5.66
	67 (19.4)	61.30	41.24	3.67	59.31	40.59	4.02	57.06	39.84	4.39	54.35	38.91	4.79	51.57	37.97	5.24	48.22	36.82	5.72
	72 (22.2)	67.60	33.98	3.75	65.39	33.22	4.09	62.89	32.37	4.47	60.03	31.40	4.87	56.79	30.30	5.31	53.09	29.05	5.80
1625	57 (13.9)	54.24	54.24	3.64	52.95	52.95	3.99	51.44	51.44	4.37	49.66	49.66	4.77	47.57	47.57	5.22	45.12	45.12	5.71
	62 (16.7)	56.46	50.47	3.66	54.64	49.92	4.01	52.62	49.27	4.38	50.30	48.46	4.78	47.74	47.30	5.22	45.19	45.19	5.71
	63 (17.2)††	57.54	41.12	3.67	55.66	40.47	4.02	53.48	39.69	4.39	51.08	38.83	4.79	48.29	37.82	5.23	45.13	36.66	5.71
	67 (19.4)	62.16	42.75	3.72	60.10	42.10	4.07	57.76	41.35	4.44	54.79	40.34	4.84	52.09	39.48	5.29	48.64	38.32	5.77
	72 (22.2)	68.53	34.91	3.80	66.25	34.16	4.14	63.63	33.29	4.52	60.68	32.31	4.92	57.33	31.20	5.36	53.30	29.86	5.84
1750	57 (13.9)	55.59	55.59	3.69	54.21	54.21	4.04	52.63	52.63	4.42	50.75	50.75	4.83	48.57	48.57	5.27	46.01	46.01	5.76
	62 (16.7)	57.23	52.49	3.71	55.38	51.94	4.06	53.25	51.24	4.43	50.98	50.38	4.83	48.64	48.64	5.28	46.07	46.07	5.77
	63 (17.2)††	58.26	42.49	3.72	56.29	41.82	4.06	53.98	41.02	4.43	51.58	40.19	4.84	48.72	39.18	5.27	45.49	38.02	5.75
	67 (19.4)	62.90	44.21	3.77	60.77	43.56	4.12	58.35	42.81	4.49	55.61	41.94	4.89	52.51	40.94	5.33	48.99	39.79	5.81
	72 (22.2)	69.33	35.81	3.85	66.95	35.05	4.19	64.25	34.18	4.56	61.22	33.19	4.97	57.77	32.08	5.41	53.42	30.65	5.88
2000	57 (13.9)	57.92	57.92	3.80	56.39	56.39	4.15	54.54	54.54	4.52	52.62	52.62	4.93	50.25	50.25	5.38	47.50	47.50	5.87
	62 (16.7)	58.62	56.31	3.81	56.71	55.68	4.15	54.72	54.72	4.52	52.70	52.70	4.93	50.32	50.32	5.38	47.55	47.55	5.87
	63 (17.2)††	59.39	45.08	3.81	57.31	44.43	4.16	54.98	43.68	4.53	52.35	42.81	4.93	49.39	41.80	5.36	46.04	40.62	5.84
	67 (19.4)	64.09	47.01	3.87	61.82	46.36	4.21	59.27	45.62	4.58	56.40	44.75	4.98	53.09	43.73	5.42	49.53	42.59	5.90
	72 (22.2)	70.58	37.51	3.94	68.07	36.74	4.29	65.24	35.87	4.66	62.05	34.87	5.06	58.47	33.75	5.50	54.41	32.48	5.98
2250	57 (13.9)	59.81	59.81	3.90	58.18	58.18	4.25	56.30	56.30	4.62	53.98	53.98	5.03	51.59	51.59	5.48	48.66	48.66	5.96
	62 (16.7)	59.84	59.84	3.90	58.25	58.25	4.25	56.37	56.37	4.63	53.96	53.96	5.03	51.65	51.65	5.48	48.72	48.72	5.96
	63 (17.2)††	60.23	47.54	3.90	58.07	46.90	4.25	55.65	46.16	4.61	52.85	45.25	5.01	49.89	44.26	5.45	46.46	43.04	5.92
	67 (19.4)	64.95	49.65	3.96	62.60	49.03	4.30	59.95	48.30	4.67	56.98	47.44	5.07	53.34	46.30	5.50	49.95	45.25	5.98
	72 (22.2)	71.53	39.11	4.04	68.89	38.33	4.38	65.94	37.45	4.75	62.64	36.46	5.15	58.93	35.34	5.58	54.76	34.06	6.06

EVAPORATOR AIR		CONDENSER ENTERING AIR TEMPERATURES °F (°C)																	
		75 (23.9)			85 (29.4)			95 (35)			105 (40.6)			115 (46.1)			125 (51.7)		
CFM	EWB °F (°C)	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**	Capacity MBtuh		Total Sys. KW**
		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡		Total	Sens‡	
24ANB760C**30 Outdoor Section With CNPH*6124A** Indoor Section – LOW																			
1200	57 (13.9)	40.42	40.42	2.41	37.04	37.04	2.72	33.67	33.67	3.06	30.32	30.32	3.45	27.03	27.03	3.89	23.78	23.78	4.41
	62 (16.7)	41.72	38.50	2.40	37.89	35.71	2.71	34.11	32.93	3.05	30.43	30.24	3.44	27.07	27.07	3.89	23.82	23.82	4.40
	63 (17.2)††	42.56	31.28	2.40	38.62	28.87	2.71	34.71	26.50	3.05	30.87	24.16	3.44	27.13	21.87	3.89	23.49	19.65	4.42
	67 (19.4)	46.26	32.68	2.39	41.97	30.19	2.69	37.72	27.73	3.02	33.54	25.31	3.40	29.47	22.94	3.85	25.52	20.64	4.36
	72 (22.2)	51.35	26.72	2.37	46.58	24.52	2.67	41.88	22.37	2.99	37.25	20.25	3.37	32.73	18.19	3.80	28.33	16.18	4.30
1300	57 (13.9)	41.61	41.61	2.42	38.10	38.10	2.73	34.60	34.60	3.07	31.14	31.14	3.45	27.72	27.72	3.89	24.36	24.36	4.41
	62 (16.7)	42.43	40.29	2.42	38.53	37.38	2.73	34.72	34.50	3.07	31.19	31.19	3.45	27.76	27.76	3.89	24.39	24.39	4.41
	63 (17.2)††	43.20	32.52	2.42	39.17	30.04	2.72	35.18	27.59	3.06	31.26	25.17	3.45	27.45	22.82	3.90	23.74	20.51	4.43
	67 (19.4)	46.92	34.00	2.40	42.53	31.43	2.70	38.19	28.89	3.04	33.94	26.40	3.42	29.79	23.96	3.86	25.76	21.57	4.37
	72 (22.2)	52.06	27.56	2.39	47.19	25.31	2.68	42.39	23.09	3.01	37.67	20.92	3.38	33.07	18.81	3.81	28.59	16.76	4.31
1400	57 (13.9)	42.69	42.69	2.44	39.06	39.06	2.74	35.45	35.45	3.08	31.86	31.86	3.46	28.33	28.33	3.90	24.87	24.87	4.41
	62 (16.7)	43.10	42.00	2.43	39.18	38.97	2.74	35.50	35.50	3.08	31.91	31.91	3.46	28.38	28.38	3.90	24.90	24.90	4.41
	63 (17.2)††	43.75	33.73	2.43	39.64	31.18	2.74	35.58	28.65	3.08	31.59	26.16	3.47	27.71	23.73	3.91	23.95	21.35	4.44
	67 (19.4)	47.48	35.29	2.42	43.01	32.64	2.72	38.60	30.03	3.05	34.26	27.45	3.43	30.06	24.94	3.87	25.98	22.48	4.39
	72 (22.2)	52.67	28.37	2.41	47.70	26.06	2.70	42.82	23.80	3.02	38.02	21.58	3.39	33.34	19.42	3.82	28.80	17.31	4.33
1600	57 (13.9)	44.57	44.57	2.47	40.72	40.72	2.77	36.88	36.88	3.10	33.11	33.11	3.48	29.38	29.38	3.92	25.73	25.73	4.42
	62 (16.7)	44.65	44.65	2.47	40.78	40.78	2.77	36.94	36.94	3.10	33.15	33.15	3.48	29.42	29.42	3.92	25.77	25.77	4.42
	63 (17.2)††	44.65	36.06	2.47	40.41	33.36	2.77	36.23	30.69	3.11	32.13	28.06	3.49	28.15	25.48	3.94	24.32	22.94	4.46
	67 (19.4)	48.40	37.78	2.45	43.78	34.98	2.75	39.26	32.22	3.08	34.82	29.50	3.46	30.50	26.83	3.90	26.34	24.21	4.41
	72 (22.2)	53.64	29.91	2.44	48.53	27.51	2.73	43.50	25.15	3.06	38.57	22.84	3.42	33.77	20.58	3.85	29.12	18.39	4.35
1800	57 (13.9)	46.13	46.13	2.50	42.09	42.09	2.80	38.10	38.10	3.13	34.13	34.13	3.50	30.25	30.25	3.94	26.44	26.44	4.44
	62 (16.7)	46.19	46.19	2.50	42.15	42.15	2.79	38.13	38.13	3.13	34.18	34.18	3.50	30.29	30.29	3.94	26.47	26.47	4.44
	63 (17.2)††	45.34	38.27	2.50	40.99	35.43	2.80	36.72	32.62	3.14	32.56	29.85	3.52	28.53	27.12	3.97	24.67	24.48	4.49
	67 (19.4)	49.11	40.17	2.49	44.40	37.22	2.78	39.78	34.32	3.11	35.25	31.45	3.49	30.86	28.62	3.93	26.66	25.82	4.44
	72 (22.2)	54.38	31.38	2.48	49.15	28.89	2.77	44.01	26.44	3.09	38.97	24.04	3.46	34.08	21.70	3.88	29.34	19.42	4.38

See notes on page 15

DETAILED COOLING CAPACITIES# CONTINUED

† Total and sensible capacities are net capacities. Blower motor heat has been subtracted.

‡ Sensible capacities shown are based on 80°F (27°C) entering air at the indoor coil. For sensible capacities at other than 80°F (27°C), deduct 835 Btuh (245 kW) per 1000 CFM (480 L/S) of indoor coil air for each degree below 80°F (27°C), or add 835 Btuh (245 kW) per 1000 CFM (480 L/S) of indoor coil air per degree above 80°F (27°C).

Detailed cooling capacities are based on indoor and outdoor unit at the same elevation per AHRI standard 210/240–2008. If additional tubing length and/or indoor unit is located above outdoor unit, a slight variation in capacity may occur.

** System kw is total of indoor and outdoor unit kilowatts.

EWB — Entering Wet Bulb

NOTE: When the required data fall between the published data, interpolation may be performed. Extrapolation is not an acceptable practice.

CONDENSER ONLY RATINGS*

SST °F (°C)		CONDENSER ENTERING AIR TEMPERATURES °F (°C)							
		55 (12.78)	65 (18.33)	75 (23.89)	85 (29.44)	95 (35.0)	105 (40.56)	115 (46.11)	125 (51.67)
24ANB724C30 – HIGH**									
30 (–1.11)	TCG	21.50	20.40	19.20	18.00	16.80	15.50	14.20	12.80
	SDT	68.60	78.50	88.30	98.10	108.00	117.80	127.80	137.90
	KW	0.99	1.14	1.30	1.47	1.66	1.87	2.11	2.39
35 (1.67)	TCG	23.70	22.50	21.20	20.00	18.60	17.20	15.80	14.30
	SDT	69.90	79.70	89.50	99.20	109.00	118.80	128.80	138.80
	KW	1.01	1.16	1.32	1.50	1.69	1.90	2.14	2.43
40 (4.44)	TCG	26.10	24.80	23.40	22.00	20.60	19.00	17.50	15.90
	SDT	71.20	81.00	90.60	100.40	110.20	120.00	129.80	139.70
	KW	1.03	1.18	1.35	1.52	1.71	1.93	2.17	2.46
45 (7.22)	TCG	28.80	27.30	25.80	24.20	22.60	21.00	19.30	17.60
	SDT	72.60	82.20	91.90	101.60	111.30	121.00	130.80	140.70
	KW	1.05	1.21	1.37	1.54	1.74	1.96	2.20	2.49
50 (10.0)	TCG	31.60	29.90	28.30	26.60	24.90	23.10	21.30	19.50
	SDT	74.00	83.70	93.30	102.90	112.50	122.10	131.90	141.70
	KW	1.08	1.23	1.40	1.57	1.77	1.98	2.24	2.53
55 (12.78)	TCG	34.60	32.80	31.00	29.20	27.30	25.40	23.40	21.50
	SDT	75.60	85.10	94.60	104.20	113.70	123.30	133.00	142.70
	KW	1.11	1.26	1.42	1.60	1.79	2.02	2.27	2.56
60 (15.56)	TCG	37.80	35.80	33.90	31.90	29.90	27.80	25.70	23.60
	SDT	77.10	86.50	96.00	105.50	115.00	124.50	134.10	143.80
	KW	1.14	1.29	1.45	1.63	1.83	2.05	2.31	2.60
24ANB724C30 – LOW**									
30 (–1.11)	TCG	14.20	13.40	12.50	11.60	10.70	9.70	8.70	7.60
	SDT	64.60	74.40	84.20	94.00	103.90	113.70	123.60	133.60
	KW	0.65	0.79	0.94	1.10	1.28	1.49	1.74	2.05
35 (1.67)	TCG	16.00	15.10	14.20	13.20	12.20	11.10	10.00	8.80
	SDT	65.70	75.50	85.30	95.10	104.90	114.70	124.60	134.60
	KW	0.67	0.81	0.96	1.12	1.30	1.51	1.77	2.08
40 (4.44)	TCG	18.00	17.00	16.00	14.90	13.80	12.60	11.40	10.20
	SDT	66.90	76.70	86.40	96.20	106.00	115.80	125.60	135.70
	KW	0.69	0.83	0.97	1.13	1.32	1.53	1.79	2.10
45 (7.22)	TCG	20.20	19.10	18.00	16.80	15.60	14.30	13.00	11.60
	SDT	68.20	77.90	87.70	97.40	107.10	116.90	126.70	136.70
	KW	0.71	0.85	0.99	1.15	1.34	1.56	1.81	2.13
50 (10.0)	TCG	22.50	21.30	20.10	18.80	17.50	16.10	14.60	0.00
	SDT	69.60	79.30	88.90	98.70	108.30	118.00	127.80	0.00
	KW	0.73	0.87	1.01	1.17	1.36	1.58	1.84	0.00
55 (12.78)	TCG	25.10	23.70	22.40	21.00	19.50	18.00	16.50	14.80
	SDT	71.10	80.70	90.30	99.90	109.50	119.10	128.90	138.60
	KW	0.76	0.89	1.03	1.19	1.38	1.59	1.86	2.17
60 (15.56)	TCG	27.80	26.30	24.90	23.30	21.80	20.10	18.40	16.70
	SDT	72.60	82.10	91.70	101.20	110.80	120.30	130.00	139.80
	KW	0.79	0.92	1.05	1.21	1.40	1.62	1.88	2.20
24ANB736C30 – HIGH**									
30 (–1.11)	TCG	32.30	30.50	28.60	26.70	24.70	22.70	20.60	18.50
	SDT	69.50	79.00	88.50	98.00	107.50	117.00	126.50	136.00
	KW	1.48	1.70	1.92	2.16	2.42	2.71	3.04	3.41
35 (1.67)	TCG	35.90	33.90	31.90	29.80	27.60	25.40	23.20	20.90
	SDT	70.90	80.40	89.90	99.30	108.70	118.20	127.60	137.10
	KW	1.51	1.73	1.96	2.20	2.46	2.75	3.09	3.47
40 (4.44)	TCG	39.80	37.60	35.40	33.10	30.80	28.40	26.00	23.60
	SDT	72.50	81.90	91.30	100.70	110.00	119.40	128.80	138.20
	KW	1.55	1.77	1.99	2.24	2.50	2.80	3.13	3.52
45 (7.22)	TCG	44.00	41.60	39.20	36.70	34.20	31.60	29.00	26.40
	SDT	74.10	83.50	92.80	102.10	111.40	120.70	130.00	139.30
	KW	1.59	1.81	2.03	2.28	2.55	2.85	3.18	3.57
50 (10.0)	TCG	48.50	45.90	43.20	40.50	37.80	35.10	32.30	29.50
	SDT	75.90	85.10	94.30	103.60	112.80	122.00	131.20	140.50
	KW	1.64	1.85	2.08	2.32	2.59	2.90	3.24	3.63
55 (12.78)	TCG	53.30	50.40	47.60	44.70	41.80	38.80	35.80	32.80
	SDT	77.70	86.80	95.90	105.10	114.30	123.40	132.50	141.70
	KW	1.69	1.90	2.12	2.37	2.64	2.95	3.30	3.69
60 (15.56)	TCG	58.40	55.30	52.20	49.10	46.00	42.80	39.60	36.30
	SDT	79.50	88.60	97.60	106.70	115.80	124.90	133.90	143.00
	KW	1.74	1.95	2.17	2.42	2.70	3.01	3.36	3.75

See notes on page 18

CONDENSER ONLY RATINGS* CONTINUED

SST °F (°C)		CONDENSER ENTERING AIR TEMPERATURES °F (°C)							
		55 (12.78)	65 (18.33)	75 (23.89)	85 (29.44)	95 (35.0)	105 (40.56)	115 (46.11)	125 (51.67)
24ANB736C30 – LOW**									
30 (–1.11)	TCG	20.70	19.30	17.90	16.50	15.10	13.60	12.20	10.60
	SDT	62.20	71.70	81.30	90.90	100.50	110.10	119.60	129.20
	KW	1.05	1.23	1.42	1.63	1.85	2.10	2.39	2.74
35 (1.67)	TCG	23.30	21.80	20.20	18.70	17.10	15.50	13.90	12.20
	SDT	63.00	72.60	82.10	91.60	101.20	110.70	120.20	129.70
	KW	1.04	1.22	1.41	1.60	1.82	2.07	2.36	2.69
40 (4.44)	TCG	26.20	24.50	22.80	21.00	19.30	17.50	15.70	13.90
	SDT	64.00	73.50	82.90	92.40	101.90	111.30	120.80	130.30
	KW	1.03	1.21	1.39	1.58	1.79	2.04	2.32	2.64
45 (7.22)	TCG	29.30	27.40	25.50	23.60	21.60	19.70	17.70	15.80
	SDT	65.10	74.40	83.80	93.20	102.60	112.10	121.50	130.90
	KW	1.03	1.20	1.38	1.56	1.77	2.00	2.28	2.60
50 (10.0)	TCG	32.70	30.50	28.40	26.30	24.20	22.00	19.90	17.70
	SDT	66.10	75.50	84.80	94.10	103.50	112.80	122.10	131.50
	KW	1.02	1.19	1.36	1.54	1.75	1.97	2.24	2.55
55 (12.78)	TCG	36.30	33.90	31.50	29.20	26.90	24.50	22.10	19.70
	SDT	67.30	76.60	85.80	95.10	104.30	113.60	122.90	132.10
	KW	1.02	1.19	1.35	1.53	1.72	1.95	2.21	2.51
60 (15.56)	TCG	40.10	37.50	34.90	32.30	29.70	27.10	24.50	21.90
	SDT	68.60	77.70	86.90	96.10	105.30	114.50	123.60	132.80
	KW	1.03	1.19	1.35	1.52	1.71	1.92	2.17	2.47
24ANB748C30 – HIGH**									
30 (–1.11)	TCG	42.60	40.50	38.40	36.10	33.60	31.10	28.40	25.50
	SDT	69.70	79.20	88.70	98.20	107.60	117.00	126.40	135.80
	KW	2.05	2.30	2.56	2.83	3.13	3.45	3.80	4.20
35 (1.67)	TCG	47.30	45.00	42.70	40.10	37.50	34.70	31.80	28.70
	SDT	71.20	80.60	90.10	99.40	108.80	118.20	127.50	136.80
	KW	2.09	2.34	2.60	2.87	3.17	3.49	3.85	4.25
40 (4.44)	TCG	52.40	49.90	47.30	44.60	41.70	38.70	35.50	32.20
	SDT	72.80	82.10	91.50	100.80	110.10	119.40	128.60	137.90
	KW	2.14	2.39	2.64	2.92	3.21	3.54	3.90	4.31
45 (7.22)	TCG	57.90	55.20	52.30	49.30	46.20	43.00	39.60	36.00
	SDT	74.50	83.70	92.90	102.20	111.40	120.60	129.80	139.00
	KW	2.19	2.43	2.69	2.96	3.26	3.59	3.96	4.37
50 (10.0)	TCG	63.90	60.80	57.70	54.50	51.10	47.60	43.90	40.10
	SDT	76.30	85.40	94.50	103.70	112.80	122.00	131.10	140.10
	KW	2.24	2.48	2.74	3.02	3.32	3.65	4.02	4.43
55 (12.78)	TCG	70.20	66.90	63.50	60.00	56.30	52.60	48.60	44.50
	SDT	78.10	87.10	96.20	105.30	114.40	123.40	132.40	141.30
	KW	2.30	2.54	2.80	3.07	3.37	3.71	4.08	4.49
60 (15.56)	TCG	77.00	73.40	69.70	65.90	62.00	57.90	53.60	49.20
	SDT	80.10	89.00	98.00	106.90	115.90	124.80	133.70	142.60
	KW	2.36	2.60	2.86	3.13	3.44	3.77	4.14	4.56
24ANB748C30 – LOW**									
30 (–1.11)	TCG	27.90	26.40	24.90	23.30	21.60	19.80	17.90	15.90
	SDT	64.80	74.50	84.20	93.80	103.50	113.10	122.70	132.30
	KW	1.41	1.65	1.91	2.18	2.48	2.84	3.25	3.73
35 (1.67)	TCG	31.40	29.80	28.10	26.30	24.50	22.50	20.40	18.20
	SDT	65.90	75.60	85.20	94.80	104.40	114.00	123.60	133.20
	KW	1.41	1.64	1.89	2.16	2.46	2.80	3.21	3.68
40 (4.44)	TCG	35.20	33.40	31.60	29.60	27.50	25.40	23.10	20.70
	SDT	67.20	76.80	86.30	95.90	105.40	115.00	124.50	134.00
	KW	1.40	1.64	1.88	2.14	2.43	2.77	3.17	3.64
45 (7.22)	TCG	39.40	37.40	35.30	33.10	30.90	28.50	26.10	23.50
	SDT	68.50	78.00	87.50	97.00	106.50	116.00	125.40	134.90
	KW	1.40	1.63	1.87	2.12	2.41	2.74	3.13	3.59
50 (10.0)	TCG	43.90	41.70	39.40	37.00	34.50	32.00	29.30	26.50
	SDT	70.00	79.30	88.80	98.20	107.60	117.00	126.40	135.70
	KW	1.41	1.63	1.86	2.11	2.39	2.71	3.09	3.54
55 (12.78)	TCG	48.70	46.30	43.80	41.20	38.50	35.70	32.80	29.70
	SDT	71.50	80.80	90.10	99.50	108.80	118.10	127.40	136.70
	KW	1.42	1.63	1.85	2.09	2.37	2.68	3.06	3.50
60 (15.56)	TCG	53.90	51.20	48.50	45.60	42.70	39.70	36.50	33.20
	SDT	73.10	82.30	91.50	100.80	110.00	119.20	128.50	137.70
	KW	1.43	1.64	1.85	2.08	2.35	2.66	3.02	3.45

See notes on page 18

CONDENSER ONLY RATINGS* CONTINUED

SST °F (°C)		CONDENSER ENTERING AIR TEMPERATURES °F (°C)							
		55 (12.78)	65 (18.33)	75 (23.89)	85 (29.44)	95 (35.0)	105 (40.56)	115 (46.11)	125 (51.67)
24ANB760C30 – HIGH**									
30 (–1.11)	TCG	51.80	49.30	46.70	44.00	41.10	38.10	34.90	31.60
	SDT	71.10	80.30	89.80	99.20	108.50	117.80	127.10	136.30
	KW	2.24	2.57	2.93	3.30	3.70	4.13	4.61	5.15
35 (1.67)	TCG	57.40	54.70	51.80	48.80	45.70	42.40	39.00	35.40
	SDT	72.70	82.00	91.20	100.50	109.80	119.00	128.20	137.40
	KW	2.30	2.64	2.99	3.36	3.76	4.20	4.69	5.23
40 (4.44)	TCG	63.50	60.50	57.30	54.10	50.70	47.10	43.40	39.50
	SDT	74.40	83.60	92.70	101.90	111.10	120.30	129.40	138.50
	KW	2.37	2.70	3.05	3.42	3.82	4.27	4.76	5.31
45 (7.22)	TCG	70.00	66.70	63.30	59.70	56.00	52.20	48.10	43.90
	SDT	76.20	85.30	94.30	103.50	112.50	121.60	130.60	139.70
	KW	2.44	2.77	3.12	3.49	3.89	4.34	4.84	5.39
50 (10.0)	TCG	77.00	73.40	69.70	65.80	61.80	57.60	53.20	48.70
	SDT	78.10	87.10	96.10	105.10	114.10	123.00	132.00	140.80
	KW	2.52	2.84	3.19	3.57	3.97	4.42	4.92	5.48
55 (12.78)	TCG	84.50	80.60	76.50	72.30	68.00	63.40	58.70	53.80
	SDT	80.10	89.00	97.90	106.80	115.70	124.50	133.30	142.00
	KW	2.60	2.93	3.27	3.65	4.06	4.51	5.01	5.56
60 (15.56)	TCG	92.60	88.30	83.90	79.30	74.60	69.70	64.60	59.20
	SDT	82.30	91.00	99.80	108.60	117.30	126.10	134.70	143.40
	KW	2.70	3.02	3.36	3.74	4.15	4.60	5.10	5.66
24ANB760C30 – LOW**									
30 (–1.11)	TCG	34.10	32.60	30.80	28.90	26.80	24.70	22.40	20.10
	SDT	65.50	75.10	84.80	94.40	103.90	113.50	123.00	132.60
	KW	1.64	1.94	2.25	2.58	2.96	3.39	3.89	4.47
35 (1.67)	TCG	38.20	36.50	34.50	32.40	30.20	27.80	25.30	22.80
	SDT	66.60	76.20	85.80	95.40	104.90	114.40	123.90	133.40
	KW	1.64	1.93	2.23	2.56	2.92	3.35	3.84	4.41
40 (4.44)	TCG	42.70	40.70	38.50	36.20	33.80	31.20	28.50	25.80
	SDT	67.90	77.50	87.00	96.50	105.90	115.40	124.80	134.20
	KW	1.63	1.92	2.22	2.53	2.89	3.31	3.79	4.35
45 (7.22)	TCG	47.50	45.30	42.90	40.40	37.70	34.90	32.00	29.00
	SDT	69.30	78.70	88.20	97.60	107.00	116.30	125.70	135.00
	KW	1.64	1.91	2.20	2.51	2.86	3.27	3.74	4.29
50 (10.0)	TCG	52.70	50.30	47.60	44.90	42.00	38.90	35.80	32.50
	SDT	70.80	80.10	89.50	98.80	108.10	117.40	126.70	136.00
	KW	1.64	1.91	2.19	2.50	2.84	3.23	3.69	4.24
55 (12.78)	TCG	58.30	55.60	52.70	49.70	46.50	43.30	39.80	36.30
	SDT	72.30	81.50	90.80	100.10	109.30	118.50	127.70	136.90
	KW	1.65	1.91	2.18	2.48	2.81	3.20	3.65	4.18
60 (15.56)	TCG	64.30	61.40	58.20	54.90	51.50	47.90	44.20	40.40
	SDT	73.90	83.10	92.30	101.40	110.60	119.70	128.80	137.90
	KW	1.67	1.92	2.18	2.47	2.79	3.17	3.61	4.13

* AHRI listing applies only to systems shown in Combination Ratings table.
KW – Outdoor Unit Kilowatts Only.
SDT – Saturated Temperature Leaving Compressor (°F)
SST – Saturated Temperature Entering Compressor (°F/°C)
TCG – Gross Cooling Capacity (1000 Btuh)

GUIDE SPECIFICATIONS
GENERAL

System Description

Outdoor-mounted, air-cooled, split-system air conditioner unit suitable for ground or rooftop installation. Unit consists of a hermetic compressor, an air-cooled coil, propeller-type condenser fan, and a control box. Unit will discharge supply air upward as shown on contract drawings. Unit will be used in a refrigeration circuit to match up to a packaged fan coil or coil unit.

Quality Assurance

- Unit will be rated in accordance with the latest edition of AHRI Standard 210.
- Unit will be certified for capacity and efficiency, and listed in the latest AHRI directory.
- Unit construction will comply with latest edition of ANSI/ ASHRAE and with NEC.
- Unit will be constructed in accordance with UL standards and will carry the UL label of approval. Unit will have c-UL approval.
- Unit cabinet will be capable of withstanding Federal Test Method Standard No. 141 (Method 6061) 500-hr salt spray test.
- Air-cooled condenser coils will be leak tested and pressure tested.
- Unit constructed in ISO9001 approved facility.

Delivery, Storage, and Handling

- Unit will be shipped as single package only and is stored and handled per unit manufacturer's recommendations.

Warranty (for inclusion by specifying engineer)

- U.S. and Canada only.

PRODUCTS

Equipment

- Factory assembled, single piece, air-cooled air conditioner unit. Contained within the unit enclosure is all factory wiring, piping, controls, compressor, refrigerant charge Puron® (R-410A), and special features required prior to field start-up.

Unit Cabinet

- Unit cabinet, including louvered coil guard, will be constructed of galvanized steel, bonderized, and coated with a powder coat paint to both sides of the sheet metal for enhanced sea coast corrosion resistance.

Fans

- Condenser fan will be direct-drive propeller type, discharging air upward.
- Condenser fan motors will be totally enclosed, 1-phase type with class B insulation and permanently lubricated bearings. Shafts will be corrosion resistant.
- Fan blades will be statically and dynamically balanced.
- Condenser fan openings will be equipped with coated steel wire safety guards.

Compressor

- Compressor will be hermetically sealed.
- Compressor will be mounted on rubber vibration isolators.

Condenser Coil

- Condenser coil will be air cooled.
- Coil will be constructed of aluminum fins with epoxy phenolic thermoset coating specially designed to resist coastal corrosion. Fins are mechanically bonded to copper tubes which are then cleaned, dehydrated, and sealed.
- ArmorPlate coating - Aluminum fin material is pre-coated on both sides with a corrosion protective epoxy phenolic coating.

Refrigeration Components

- Refrigeration circuit components will include liquid-line shutoff valve with sweat connections, vapor-line shutoff valve with sweat connections, system charge of Puron® (R-410A) refrigerant, and compressor oil.
- Unit will be equipped with high-pressure switch, low pressure switch and filter drier for Puron refrigerant.

Operating Characteristics

- The capacity of the unit will meet or exceed _____ Btuh at a suction temperature of _____ °F/°C. The power consumption at full load will not exceed _____ kW.
- Combination of the unit and the evaporator or fan coil unit will have a total net cooling capacity of _____ Btuh or greater at conditions of _____ CFM entering air temperature at the evaporator at _____ °F/°C wet bulb and _____ °F/°C dry bulb, and air entering the unit at _____ °F/°C.
- The system will have a SEER of _____ Btuh/watt or greater at DOE conditions.

Electrical Requirements

- Nominal unit electrical characteristics will be _____ v, single phase, 60 hz. The unit will be capable of satisfactory operation within voltage limits of _____ v to _____ v.
- Unit electrical power will be single point connection.
- Control circuit will be 24v.

Special Features

- Refer to section of this literature identifying accessories and descriptions for specific features and available enhancements.

SYSTEM DESIGN SUMMARY

1. Intended for outdoor installation with free air inlet and outlet. Outdoor fan external static pressure available is less than 0.01-in. w.c.
2. This product is qualified for low ambient cooling operation (below 55°F/12.8°C) when used with an Infinity User Interface ONLY.
3. The maximum outdoor operating ambient in cooling mode is 125°F (51.67°C).
4. For reliable operation, unit should be level in all horizontal planes.
5. For interconnecting refrigerant tube lengths greater than 80 ft (23.4 m) and/or 35 ft (10.7 m) vertical differential, consult Residential Piping and Longline Guideline and Service Manual available from equipment distributor.
6. If any refrigerant tubing is buried, provide a 6 in. (152.4 mm) vertical rise to the valve connections at the unit. Refrigerant tubing lengths up to 36 in. (914.4 mm) may be buried without further consideration. Do not bury refrigerant lines longer than 36 in. (914.4 mm).
7. Use only copper wire for electric connection at unit. Aluminum and clad aluminum are not acceptable for the type of connector provided.
8. Do not apply capillary tube indoor coils to these units.
9. Factory-supplied filter drier must be installed.

Edition Date: 09/12

Catalog No. 24ANB7C–2PD

Replaces: 24ANB7C–1PD

FV4C
Performance™ Series Fan Coil
Sizes 002 Thru 006

Carrier®
Turn to the Experts℠

Product Data

PREMIUM ENVIRONMENTALLY SOUND FAN COIL

The FV4C is the premium air handler combining the proven technology of Carrier fan coils with environmentally sound Puron© refrigerant. The FV4C achieves an operational advantage when the ECM (Electronically Commutated Motor) is combined with a Carrier Performance™ heat pump with Puron© refrigerant.

With attention to quiet, efficient, and comfortable operation, Carrier has developed a new benchmark for superior indoor comfort and control. ArmorCoat™ provides a tin plating of the indoor coil's copper hairpins. This creates a barrier between the corrosion-causing elements and the coil.

Carrier's heat pump and air conditioning systems now feature Puron© refrigerant (R-410A), the chlorine-free refrigerant that is the future for the residential heating and cooling industry. The FV4C using Puron© refrigerant maximizes performance for environmentally sound systems. In addition to environmental safety, these systems are 30 to 40% more efficient than standard heating and cooling systems, thereby combining excellence in efficiency and environmental safety.

The FV4C provides these benefits due to Carrier's command of ECM technology. These motors are extremely efficient at all speeds, and enable the FV4C to operate at the correct speed to deliver airflow precisely, ensuring proper performance across a wide range of duct static pressures. This adaptive efficiency also makes installation quality easier to achieve for today's demanding homeowner.

Carrier's command of ECM technology may be most evident in the comfort advantages that ECM can deliver. Operation set up steps on the Easy Select™ Board provide the installing technician with alternatives to maximize comfort and efficiency. For true indoor comfort, the homeowner can achieve command of both temperature and humidity in cooling and heating modes.

Another feature which sets the FV4C apart is the factory-installed TXV, which enhances efficiency and provides compressor protecting operation at all recommended conditions. Grooved copper tubing, louvered aluminum fins, and the large face areas of the FV4C refrigerant coils also provide superior efficiency, for high SEER and HSPF performance. Carrier leads the way in condensate control, a hallmark of these multipoise fan coils. All of these featured components are protected within a rugged, prepainted metal cabinet lined with super thick, high density insulation. For neat, high quality installations the unit exterior features sweat refrigerant connections for simple leak free performance, and multiple electrical entry for both high and low voltage service.

For superior technology and unmatched comfort, the environmentally sound and efficient FV4C can't be beat.

FEATURES

Environmentally Sound Refrigerant Technology

- Puron®, chlorine-free non-ozone depleting refrigerant
- Thermostatic Expansion Valve (TXV) designed to maximize performance with Puron® refrigerant

Energy Efficient Operation

- Electronically Commutating Motor (ECM) operates efficiently at all speeds
- Maximizes efficiency of heating and cooling systems
- Ultra low power consumption during fan only operation

Indoor Weather Control

- Warm, comfortable heating air temperatures
- Unmatched humidity control, especially with Carrier's Thermidistat™ Control

Airflow and Sound Technology

- Diffuser air discharge section for high airflow efficiency and quiet, smooth operation
- High duct static capability
- Unique cabinet design that meets new stringent regulations for air leakage. Meets requirements of a 2% cabinet leakage rate when tested at 1.0 inches of static pressure

Condensate Control and Disposal Technology

- Minimal standing waterless microbial growth for improved IAQ and reduced condensate line clogging and related condensate leakage
- Condensate fittings relocated away from turbulent airflow patterns at the blower entrance for improved condensate control performance
- Overflow feature for slope coil units allows condensate to exit the unit without damage to product under clogged primary and secondary line conditions
- Tested for condensate disposal at conditions much more severe than those required by AHRI
- Primary and secondary drain connections to comply with HUD
- All pans constructed of an injection molded glass-filled polycarbonate engineered resin material, with brass drain connections.
- High density, super thick cabinetry insulation with vapor barrier
- Pre-painted galvanized sheet metal cabinet

Heat Transfer Technology

- Grooved copper tubing
- Lanced sine wave aluminum fins
- Discreet refined counter-flow refrigerant circuitry
- Bi-flow hard shut-off TXV metering device
- ArmorCoat™ coil protection available

Quality Assisting, Ease of Installation and Service Features

- All units multipoise
- Provision made for suspending from roof or ceiling joints
- Modular cabinet on 003 thru 006 units
- Sweat connections for leak free service
- Multiple electrical entry for application flexibility (high and low voltage)
- Low voltage terminal strip, to safely hold connections within the cabinet
- Inspection plate on A-coil models for quick coil cleanliness inspection
- Cabinet construction features innovations designed to prevent cabinet sweating

Controls and Electrical Features

- Easy Select™ Board to maximize comfort, efficiency, and safe heater airflow operation
- Easy plug connection provided for quick installation of accessory heater packages
- 40VA 208/230v transformer
- Replaceable 5-amp blade-type auto fuse protects against transformer secondary short

Filter Features

- Factory supplied filter
- Cleanable polyester filter media
- Filter "springs" out for easy access - no tools required
- Newly improved filter rack area - filter door insulation added for an improved air seal

MODEL NUMBER NOMENCLATURE

1	2	3	4	5	6	7	8	9	10	11	12
F	V	4	C	N	B	0	0	3	0	0	0

Product
F = Fan Coil

Type
V = Puron® Refrigerant

Position
4 = Multipoise

Series
C

Electrical
N = 208/230v, 1ph–60 Hz

Cabinet/Insulation
B = Modular
F = Single piece

Capacity
002 = 18–36,000
003 = 24–42,000
005 = 30–48,000
006 = 30–60,000

Heating Size
T00 = ArmorCoat™
000 = No Heat
005 = 5 kW
075 = 7.5 kW
008 = 8 kW
010 = 10 kW
011 = 11 kW
015 = 15 kW

FV4C

Puron™ the environmentally sound refrigerant

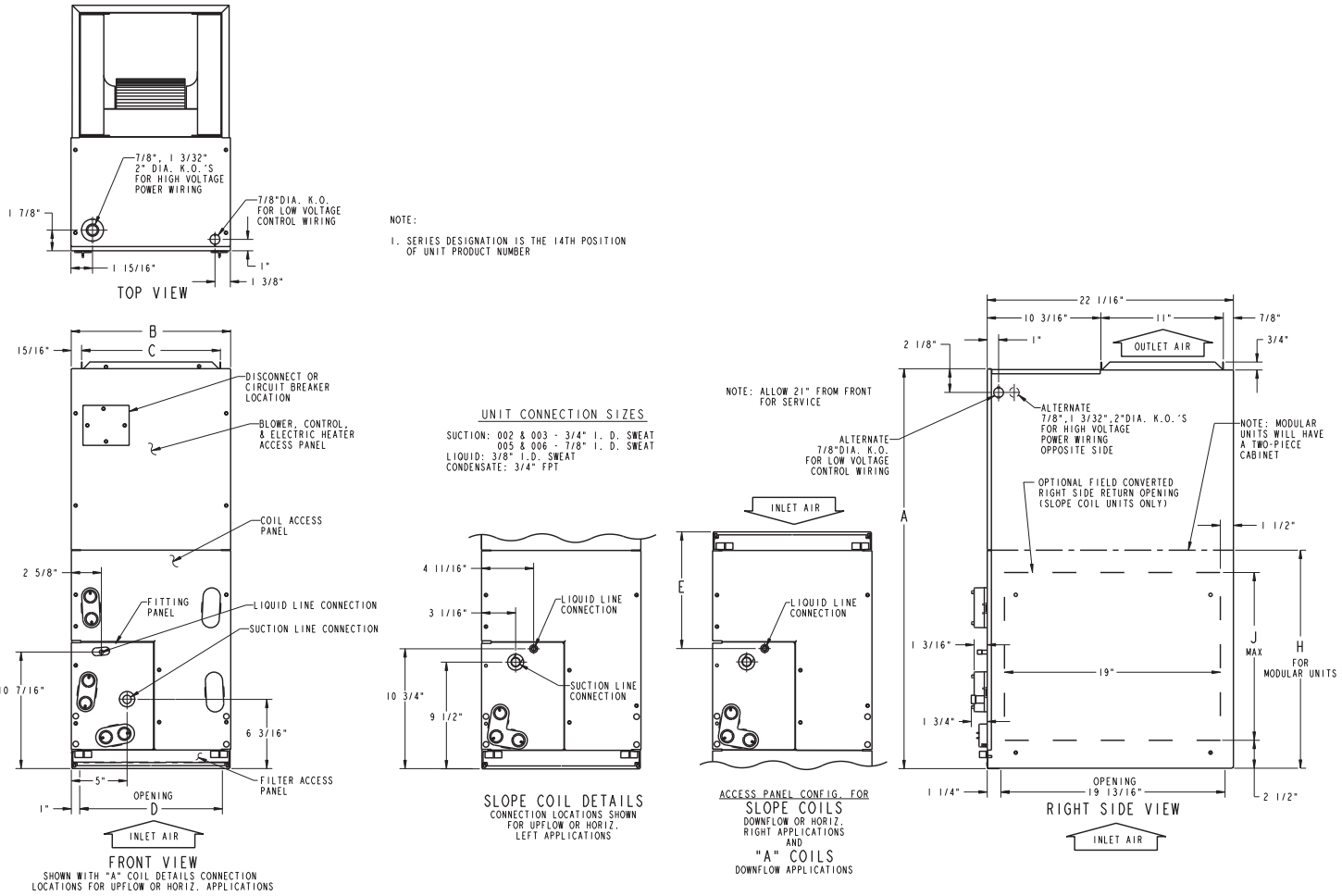
CERTIFICATION APPLIES ONLY WHEN THE COMPLETE SYSTEM IS LISTED WITH ARI

ISO 9001:2000 QMI REGISTERED

ArmorCoat™

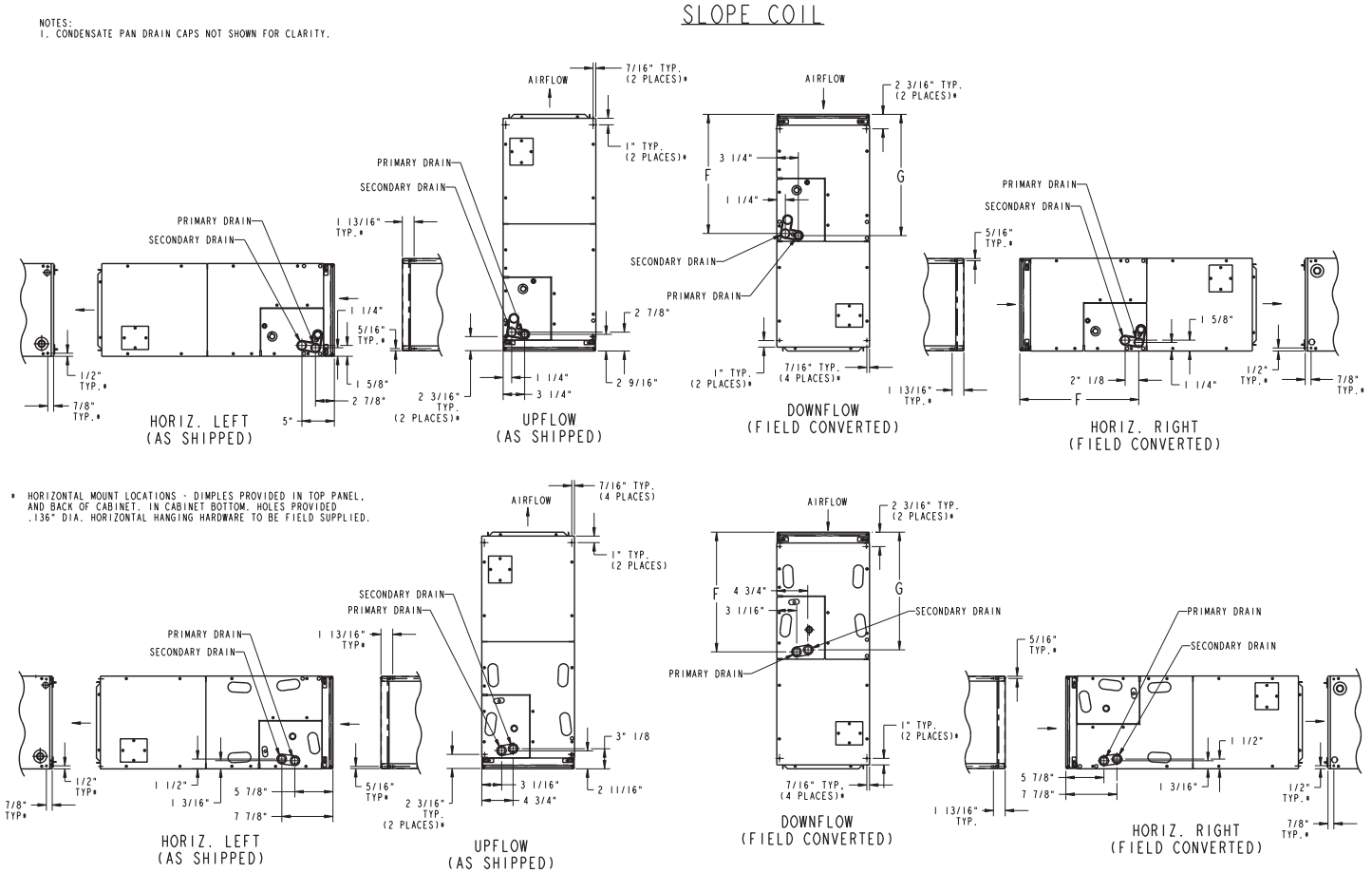
SPECIFICATIONS

MODEL FV4C	002	003	005	006
COIL				
Refrigerant Metering Device	Puron® Refrigerant (R–410A)			
TXV Size	2 Ton	3 Ton	4 Ton	
Rows/Fins Per In.	3 / 14.5			
Face Area (Sq Ft)	3.46		5.93	7.42
Configuration	A	Slope	A	
BLOWER & MOTOR				
Air Discharge	Upflow, Downflow, Horizontal			
CFM (Nominal Clg/Htg)	525 / 470 700 / 630 875 / 785 1050 / 945	700 / 630 875 / 785 1050 / 945 1225 / 1100	875 / 785 1050 / 945 1225 / 1100 1400 / 1260	1050 / 945 1225 / 1100 1400 / 1260 1750 / 1575
Motor HP (ECM)	1/2			3/4
FILTER CLEANABLE				
21–1/2" (546 mm) by	16–3/8" (417 mm)	19–7/8" (505 mm)		23–5/16" (585 mm)
CABINET CONFIGURATION OPTIONS				
	1 Piece	1 Piece or Modular		Modular



DIMENSIONS

UNIT SIZE	A		B		C		D		E		H		J	
	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm	in	mm
FV4CNB003	53–7/16	1357	21–1/8	537	19–1/4	489	19–1/8	486	19–3/16	487	28–5/16	735	19	483
FV4CNB005	53–7/16	1357	21–1/8	537	19–1/4	489	19–1/8	486	19–3/16	487	28–5/16	735	—	—
FV4CNB006	59–3/16	1503	24–11/16	627	22–3/4	578	22–11/16	576	25–1/4	642	34–1/16	865	—	—
FV4CNF002	42–11/16	1084	17–5/8	448	15–3/4	400	15–5/8	397	10–3/4	273	—	—	—	—
FV4CNF003	53–7/16	1357	21–1/8	537	19–1/4	489	19–1/8	486	19–3/16	487	—	—	19	483
FV4CNF005	53–7/16	1357	21–1/8	537	19–1/4	489	19–1/8	486	19–1/2	495	—	—	—	—



DIMENSIONS

UNIT SIZE	F		G		COIL TYPE	SHIPPING WEIGHT	
	in	mm	in	mm		lb	kg
FV4CNB003	26-15/16	684	27-1/2	699	SLOPE	150	68
FV4CNB005	26-15/16	684	27-1/2	699	A	172	78
FV4CNB006	32-15/16	837	32-5/8	829	A	207	94
FV4CNF002	18-9/16	471	18-1/4	464	A	135	61
FV4CNF003	26-15/16	684	27-1/2	699	SLOPE	150	68
FV4CNF005	27-1/4	692	26-15/16	684	A	172	78

PERFORMANCE DATA

FV4C ADVANCED FAN COIL AIRFLOW DELIVERY CHART (CFM)

OPERATING MODE										
UNIT SIZE	OUTDOOR UNIT CAPACITY	SINGLE—SPEED APPLICATION		TWO—SPEED APPLICATION				FAN ONLY		
				High Speed		Low Speed				
		Nominal A/C Cooling	A/C Cooling Dehumidity	Nominal A/C Cooling	A/C Cooling Dehumidity	Nominal A/C Cooling	A/C Cooling Dehumidity	Lo	Med	High
002	018	525	420	—	—	—	—	350	420	525
	024	700	560	700	560	560	450	350	560	700
	030	875	700	—	—	—	—	440	700	875
	036	1050	840	1050	840	840	670	525	840	1050
003	024	700	560	700	560	560	450	415	560	700
	030	875	700	—	—	—	—	440	700	875
	036	1050	840	1050	840	840	670	525	840	1050
	042	1225	980	—	—	—	—	610	980	1225
005	030	875	700	—	—	—	—	440	700	875
	036	1050	840	1050	840	840	670	525	840	1050
	042	1225	980	—	—	—	—	610	980	1225
	048	1400	1120	1400	1120	1120	895	700	1120	1400
006	036	1050	840	1050	840	840	670	540	840	1050
	042	1225	980	—	—	—	—	610	980	1225
	048	1400	1120	1400	1120	1120	895	700	1120	1400
	060	1750	1400	1750	1400	1400	1120	875	1400	1750

NOTES:

1. The above airflows result with the AC, HP CFM ADJUST select jumper set on NOM.
2. Air flow can be adjusted +15% or −10% by selecting HI or LO respectively for all modes except fan only.
3. Dry coil at 230 volts and with 10kW heater and filter installed.
4. Airflows shown are at standard air conditions.

*Consult ARI ratings before matching outdoor unit with FV4C fan coil.

FV4C ADVANCED FAN COIL AIRFLOW DELIVERY CHART (CFM)

OPERATING MODE										
UNIT SIZE	OUTDOOR UNIT CAPACITY	SINGLE—SPEED APPLICATION		TWO—SPEED APPLICATION				FAN ONLY		
				High Speed		Low Speed				
		Heat Pump Comfort	Heat Pump Efficiency	Heat Pump Comfort	Heat Pump Efficiency	Heat Pump Comfort	Heat Pump Efficiency	Lo	Med	High
002	018	470	525	—	—	—	—	350	380	470
	024	630	700	630	700	505	560	350	505	630
	030	785	875	—	—	—	—	390	630	785
	036	945	1050	945	1050	755	840	470	755	945
003	024	630	700	630	700	415	560	415	505	630
	030	785	875	—	—	—	—	415	630	785
	036	945	1050	945	1050	755	840	470	755	945
	042	1100	1225	—	—	—	—	550	880	1100
005	030	785	875	—	—	—	—	425	630	785
	036	945	1050	945	1050	755	840	470	755	945
	042	1100	1225	—	—	—	—	550	880	1100
	048	1260	1400	1260	1400	1010	1120	630	1010	1260
006	036	945	1050	945	1050	755	840	540	755	945
	042	1100	1225	—	—	—	—	550	880	1100
	048	1260	1400	1260	1400	1010	1120	630	1010	1260
	060	1575	1750	1575	1750	1260	1400	785	1260	1575

NOTES:

1. The above airflows result with the AC, HP CFM ADJUST select jumper set on NOM.
2. Air flow can be adjusted +15% or −10% by selecting HI or LO respectively for all modes except fan only.
3. Dry coil at 230 volts and with 10kW heater and filter installed.
4. Airflows shown are at standard air conditions.

PERFORMANCE DATA (cont)

AIRFLOW DELIVERY CHART (CFM) — ELECTRIC HEATING MODES

FAN UNIT SIZE	OUTDOOR UNIT CAPACITY BTUH	ELECTRIC HEATER kW RANGE											
		0–5			0–10			0–15			0–20		
		Lo	Nom	High	Lo	Nom	High	Lo	Nom	High	Lo	Nom	High
002	18,000	625	625	625	675	675	–	–	–	–	–	–	–
	24,000	650	725	835	–	725	835	875	875	875	–	–	–
	30,000	815	905	1040	–	905	1040	900	900	1040	1100	1100	1100
	36,000	980	1085	1250	980	1085	1250	980	1085	1250	1100	1100	1250
003	24,000	675	725	835	875	875	–	–	–	–	–	–	–
	30,000	815	905	1040	875	905	1040	1100	1100	1100	–	–	–
	36,000	980	1085	1250	980	1085	1250	1100	1100	1250	1225	1225	1250
	42,000	1140	1270	1460	1140	1270	1460	1140	1270	1460	1225	1270	1460
FAN UNIT SIZE	**OUTDOOR UNIT CAPACITY BTUH**	**ELECTRIC HEATER kW RANGE**											
		0–10			0–15			0–20			0–30		
		Lo	Nom	High	Lo	Nom	High	Lo	Nom	High	Lo	Nom	High
005	30,000	975	975	1040	1100	1100	1100	–	–	–	–	–	–
	36,000	980	1085	1250	1100	1100	1250	1250	1250	1250	–	–	–
	42,000	1140	1270	1460	1140	1270	1460	1250	1270	1460	–	–	–
	48,000	1305	1450	1665	1305	1450	1665	1305	1450	1665	1500	1500	1665
006	36,000	1100	1100	1250	1350	1350	1350	–	–	–	–	–	–
	42,000	1140	1270	1460	1350	1350	1460	1525	1525	1525	–	–	–
	48,000	1305	1450	1665	1350	1450	1665	1525	1525	1665	1750	1750	1750
	60,000	1630	1810	2085	1630	1810	2085	1630	1810	2085	1750	1810	2085

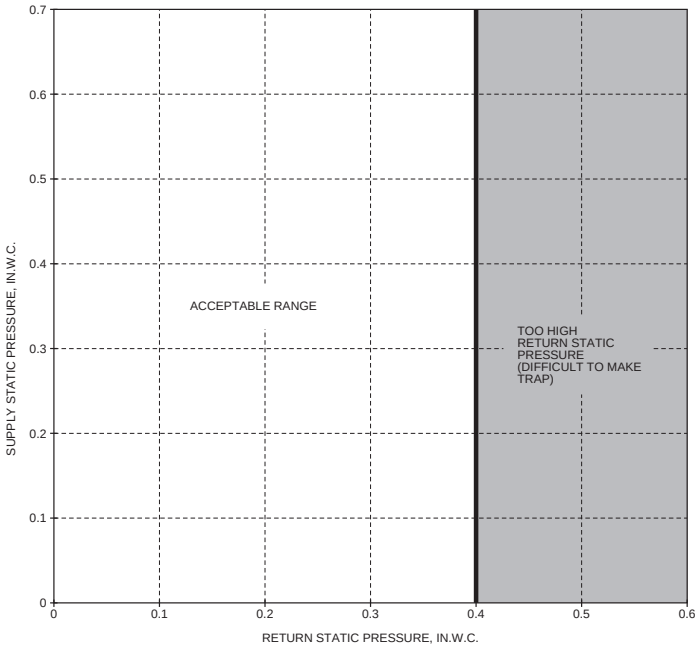
NOTE: Lo, NOM, and HI refer to AC, HP CFM ADJUST selection.
– Airflow not recommended for heater/system size.

MINIMUM CFM FOR ELECTRIC HEATER APPLICATION

FAN COIL UNIT	HEAT PUMP UNIT SIZE	CFM				
		HEATER SIZE kW				
		5	8, 9, 10	15	18, 20	24, 30
002	Heater Only	625	625	725	875	—
	018	625	625	—	—	—
	024	650	725	875	—	—
	030	800	875	875	1040	—
	036	970	970	970	1040	—
003	Heater Only	675	700	1050	1050	—
	024	675	875	—	—	—
	030	800	875	1100	—	—
	036	975	975	1100	1225	—
	042	1125	1125	1125	1225	—
005	Heater Only	675	700	1050	1050	1400
	018	800	875	1100	—	—
	036	975	975	1100	1225	—
	042	1125	1125	1125	1225	—
	048	1305	1305	1305	1305	1400
006	Heater Only	1050	1050	1050	1050	1750
	018	1100	1100	1350	1350	—
	042	1125	1125	1350	1350	—
	048	1300	1300	1350	1465	1750
	060	1625	1625	1625	1750	1750

NOTES:
1. Heater Only – Air conditioner with electric heater application.
2. These airflows are minimum acceptable airflows as UL listed. Actual airflow delivered will be per airflow delivery chart for Electric Heating Modes.

PERFORMANCE DATA (cont)



A02296

ACCEPTABLE DUCT CONDITIONS

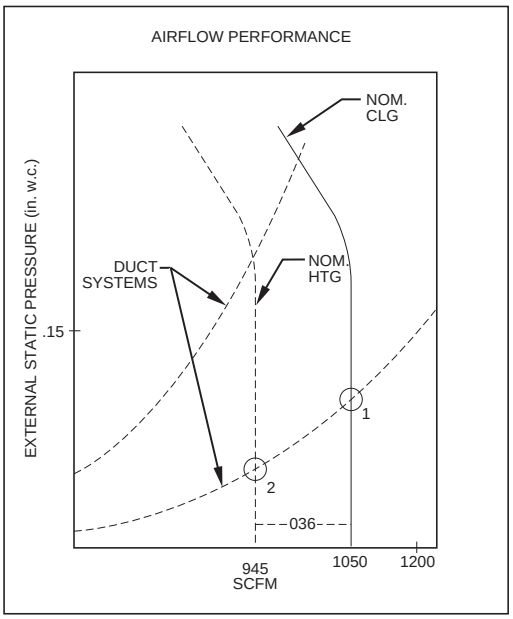
For satisfactory operation (specifically making dry secondary trap), subject fan coils must be installed with duct systems which fall within the "Acceptable Range" illustrated above.

The airflow performance charts for the FV4C fan coil depict nominal airflow delivery for heating and cooling mode operation versus duct system static pressure drop. Cooling mode operation is shown as solid vertical lines for all 4 system size selections. Heating mode operation for the 4 system size selections are shown as dashed vertical lines.

The dotted curved lines are static pressure drop characteristics for several fixed-duct systems. These lines can be used to predict the system static pressure drop at any airflow given the actual drop at 1 known point.

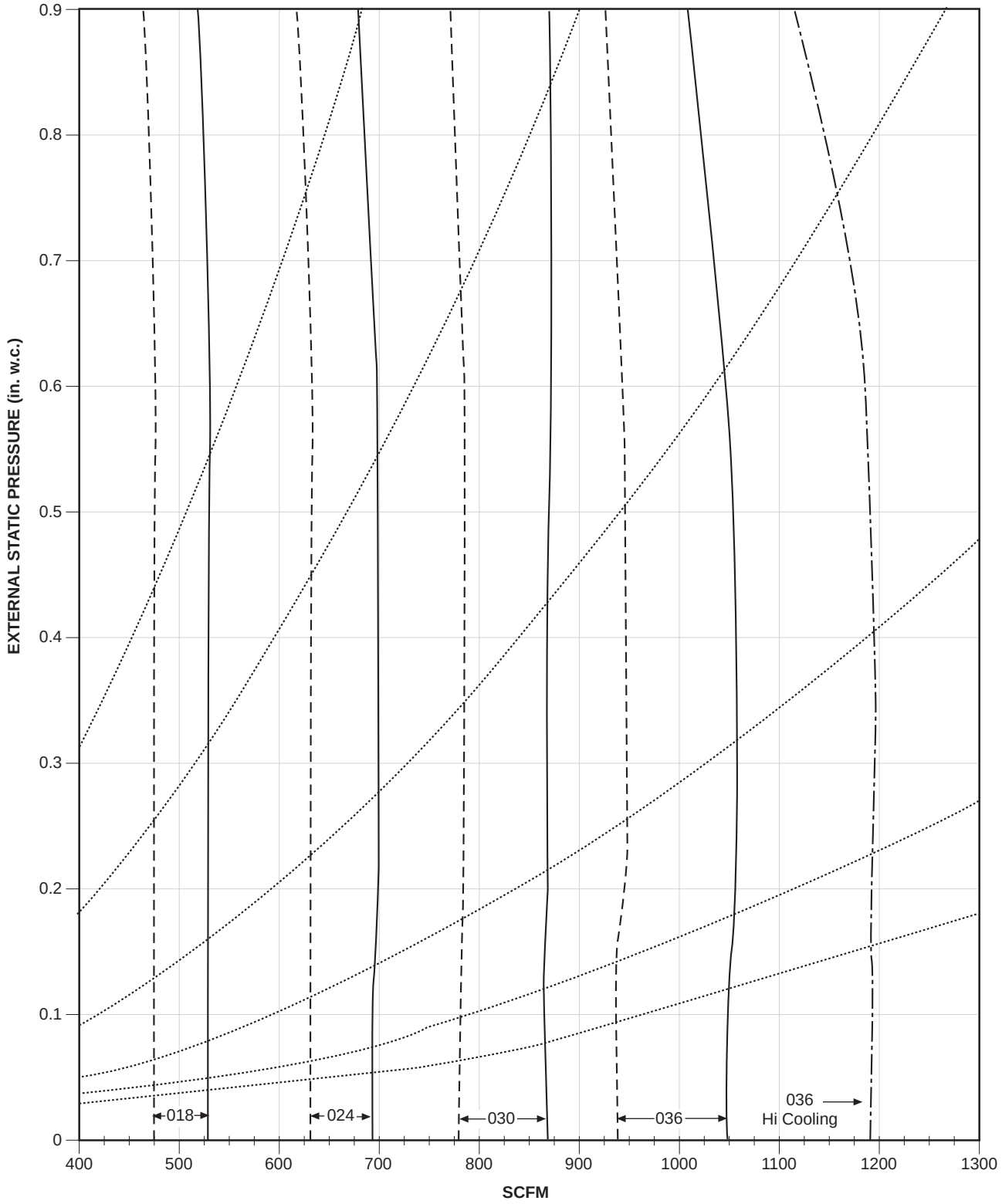
For example, a duct system is designed for 0.15 in. water column (in. w.c.) drop at 1200 CFM. The FV4CNF005 operating at nominal cooling airflow would deliver 1050 CFM with a duct system drop of 0.11 in. w.c.. (See point 1.) On the same duct system, the FV4CNF005 operating at nominal heating airflow would deliver 945 CFM with a duct system drop of 0.09 in. w.c. (See point 2.)

This example is but one of many possible duct system designs. The FV4CNF005 will deliver the above airflows against much higher static pressures.



A09339

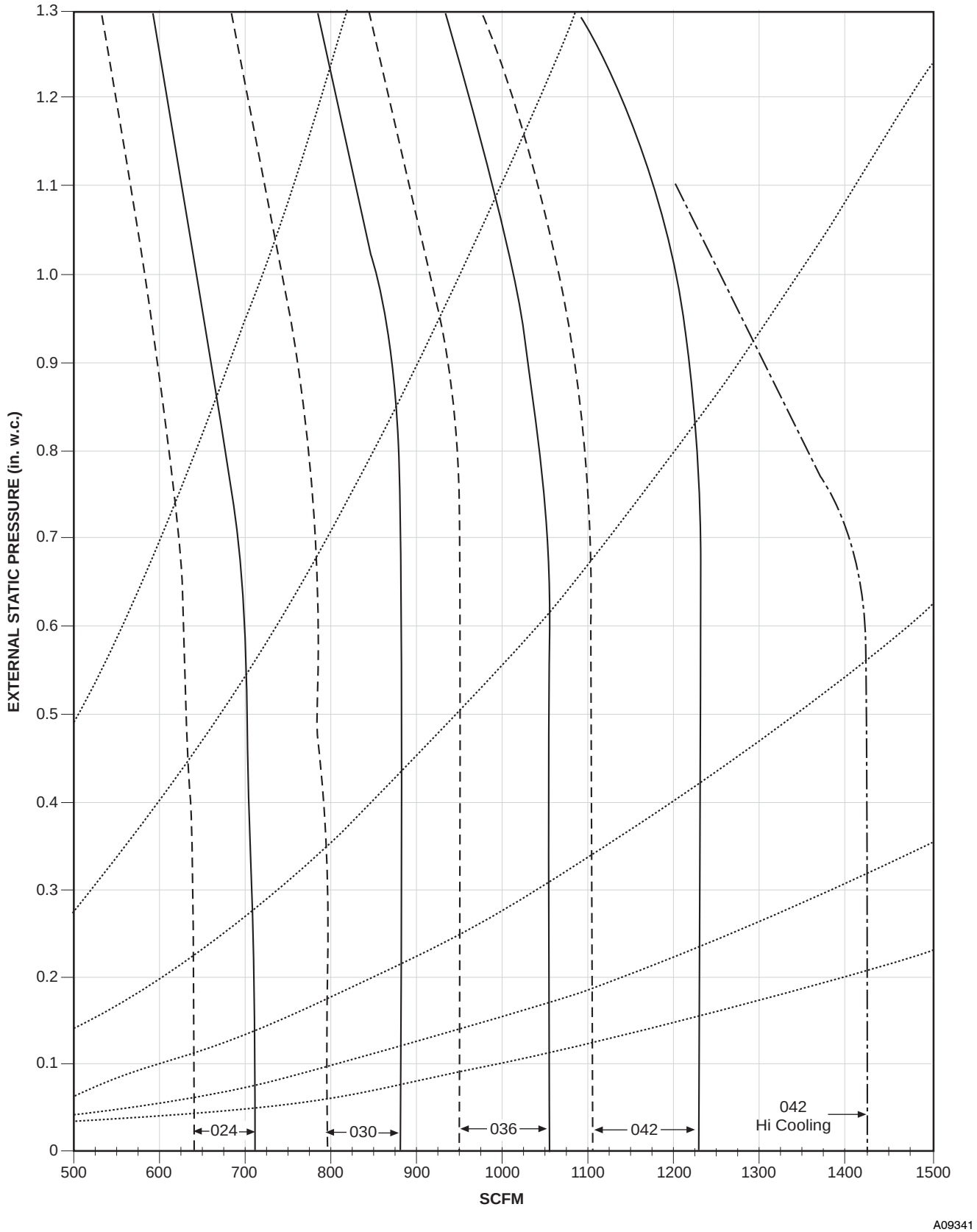
AIRFLOW PERFORMANCE



FV4CNF002

——— Nominal Cooling and Heat Pump Efficiency airflow for each size selection. Airflow can be adjusted +15% to −10%.
– – – – Nominal Heat Pump Comfort airflow for each size selection. Airflow can be adjusted +15% to −10%.
· – · – Maximum cooling airflow for largest size selection. Adjusted +15% from nominal.
· · · · · · Fixed Duct Systems (See description under Acceptable Duct Conditions.)

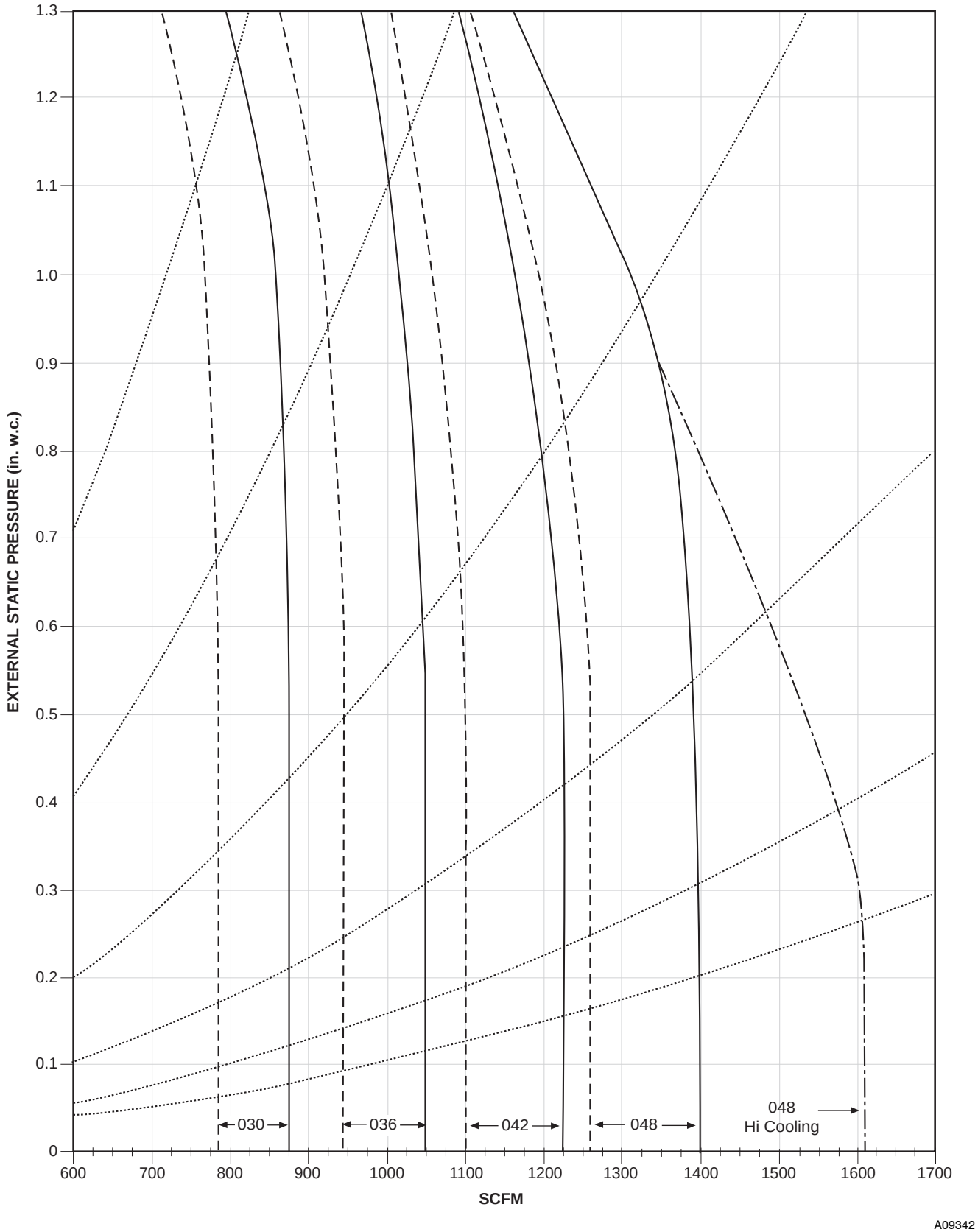
AIRFLOW PERFORMANCE



A09341

FV4CN(B,F)003

——— Nominal Cooling and Heat Pump Efficiency airflow for each size selection. Airflow can be adjusted +15% to −10%.
– – – – Nominal Heat Pump Comfort airflow for each size selection. Airflow can be adjusted +15% to −10%.
· – · – Maximum cooling airflow for largest size selection. Adjusted +15% from nominal.
· · · · · · Fixed Duct Systems (See description under Acceptable Duct Conditions.)

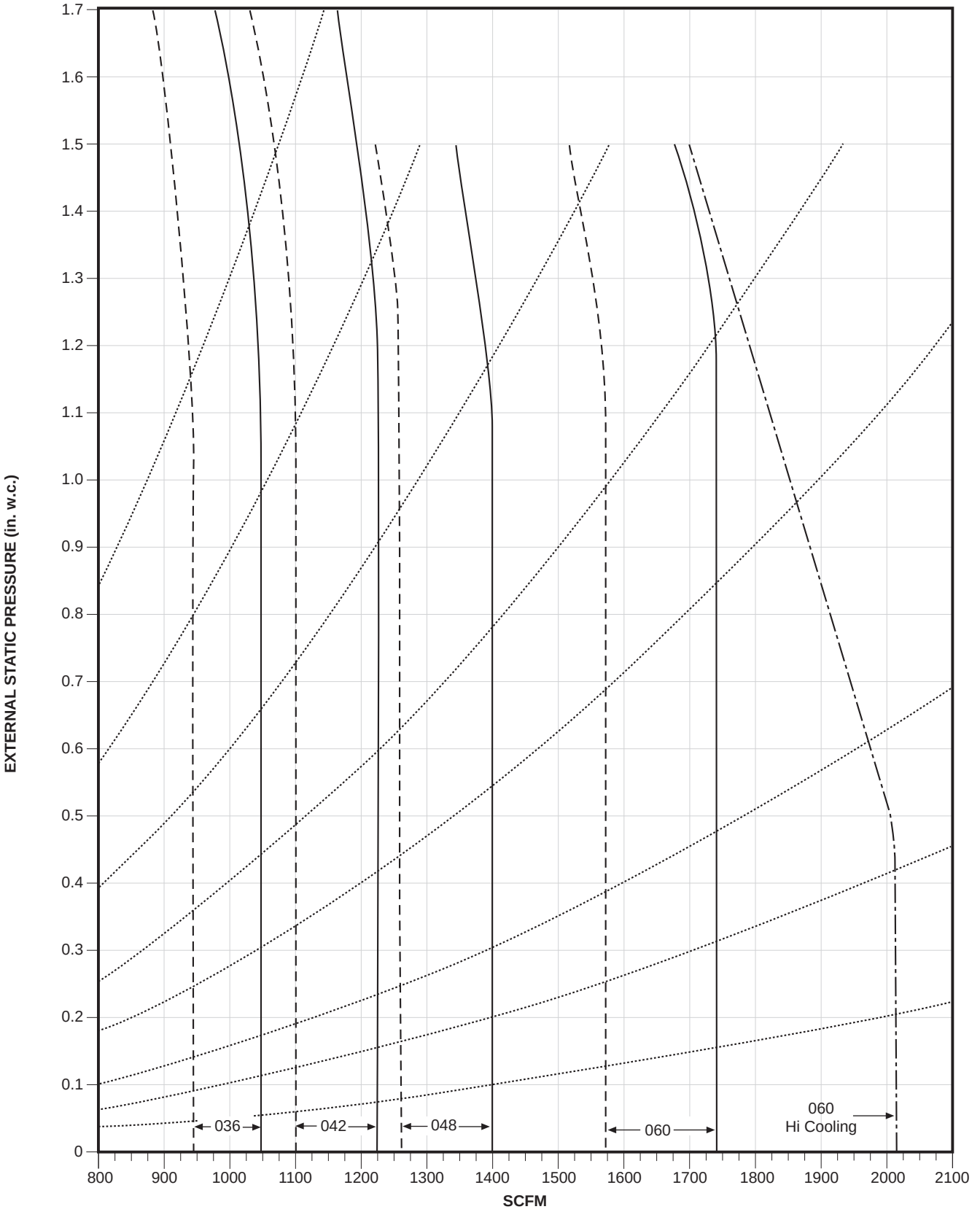


A09342

FV4CN(B,F)005

——— Nominal Cooling and Heat Pump Efficiency airflow for each size selection. Airflow can be adjusted +15% to −10%.
– – – – Nominal Heat Pump Comfort airflow for each size selection. Airflow can be adjusted +15% to −10%.
· – · – Maximum cooling airflow for largest size selection. Adjusted +15% from nominal.
· · · · · · Fixed Duct Systems (See description under Acceptable Duct Conditions.)

AIRFLOW PERFORMANCE



FV4CNB006

——— Nominal Cooling and Heat Pump Efficiency airflow for each size selection. Airflow can be adjusted +15% to −10%.

– – – – Nominal Heat Pump Comfort airflow for each size selection. Airflow can be adjusted +15% to −10%.

· – · – Maximum cooling airflow for largest size selection. Adjusted +15% from nominal.

· · · · · · Fixed Duct Systems (See description under Acceptable Duct Conditions.)

PERFORMANCE DATA (cont)

COOLING CAPACITIES (MBtuh)

UNIT SIZE	EVAP COIL AIR Cfm BF	SATURATED TEMPERATURE LEAVING EVAPORATOR (°F / °C)														
		35 / 2			40 / 4			45 / 7			50 / 10			55 /13		
		Evaporator Air — Entering Wet–Bulb Temperature														
		72°F 22°C	67°F 19°C	62°F 17°C	72°F 22°C	67°F 19°C	62°F 17°C	72°F 22°C	67°F 19°C	62°F 17°C	72°F 22°C	67°F 19°C	62°F 17°C	72°F 22°C	67°F 19°C	62°F 17°C
002	500	40	32	26	36	28	22	32	24	18	27	19	14	21	13	11
	0.04	18	18	19	16	16	17	14	14	15	12	12	13	10	10	11
	650	50	40	32	45	36	27	39	30	22	33	24	18	26	17	14
	0.07	21	22	23	19	20	21	16	17	18	14	15	16	12	13	14
	875	58	49	38	53	42	32	46	35	27	39	28	22	31	20	18
	0.10	24	26	28	22	24	25	19	21	22	17	19	19	15	16	18
	1000	62	51	41	56	45	35	50	38	29	42	30	24	33	22	20
	0.11	26	28	31	23	26	28	21	23	25	18	20	21	16	18	20
	1250	67	55	45	61	49	39	54	42	33	46	34	28	37	25	24
	0.13	29	33	36	27	30	33	24	27	30	22	24	26	19	21	24
003	800	59	48	38	53	42	32	46	35	24	39	27	20	30	18	16
	0.20	28	29	31	25	27	28	22	23	24	19	20	20	16	16	16
	1000	68	56	45	61	49	37	54	41	29	45	32	25	35	22	20
	0.22	32	34	37	29	31	33	26	28	28	23	24	25	19	20	20
	1200	75	62	49	68	54	42	60	45	34	50	36	29	40	25	23
	0.25	35	39	42	32	36	38	29	32	33	26	28	29	22	23	23
	1400	80	67	54	73	59	46	64	49	38	54	39	32	43	28	27
	0.27	38	43	47	35	39	43	32	36	37	28	32	32	24	26	27
005	750	61	49	39	55	43	33	48	37	27	41	29	20	33	21	17
	0.04	27	27	28	24	25	25	21	22	22	18	18	18	15	15	15
	950	74	60	48	67	53	40	59	45	33	50	35	25	39	24	21
	0.06	32	34	35	29	30	31	25	26	27	22	23	23	18	18	19
	1150	89	72	57	79	63	48	69	52	38	58	41	31	44	29	25
	0.07	37	39	41	33	35	36	29	31	32	25	26	27	20	22	22
	1500	103	84	66	92	73	56	81	61	46	67	48	39	52	34	31
	0.10	43	46	49	38	41	44	34	37	39	29	32	33	25	27	27
	1700	110	89	71	99	78	60	86	65	49	72	51	42	56	37	35
	0.11	45	50	53	41	45	48	36	39	42	31	34	36	27	29	30
006	1050	77	62	50	69	55	43	61	47	35	52	38	27	41	27	22
	0.01	34	36	37	31	32	33	27	28	29	23	25	24	20	20	20
	1300	100	82	65	90	71	55	79	60	45	66	47	37	49	32	27
	0.02	42	45	47	37	40	42	33	35	37	29	31	32	23	25	24
	1750	117	96	77	106	84	65	93	71	53	78	56	46	60	40	34
	0.04	48	53	57	44	48	52	39	43	46	34	38	39	29	31	31
	2050	126	103	83	114	91	71	99	76	59	84	60	50	65	44	39
	0.05	52	58	63	48	53	57	43	47	51	37	42	43	33	35	35
	2300	132	108	87	119	95	75	105	80	63	88	63	54	70	47	42
	0.06	55	62	68	50	57	61	45	51	54	40	45	46	35	39	38

BF – Bypass Factor

– Sensible Heat Capacity (1000 Btuh)

– Gross Cooling Capacity (1000 Btuh)

NOTES:

1. Contact manufacturer for cooling capacities at conditions other than shown in table.
2. Formulas:

   Leaving db = entering db $-\frac{\text{sensible heat cap.}}{1.09 \times \text{CFM}}$

   Leaving wb = wb corresponding to enthalpy of air leaving coil (h_{lwb})

   $h_{lwb} = h_{ewb} - \frac{\text{total capacity (Btuh)}}{4.5 \times \text{CFM}}$

   where h_{ewb} = enthalpy of air entering coil. Direct interpolation is permissible. Do not extrapolate.
3. SHC is based on 80°F db temperature of air entering coil. Below 80°F db, subtract (Correction Factor x CFM) from SHC. Above 80°F db, add (Correction Factor x CFM) to SHC.
4. Bypass Factor = 0 indicates no psychometric solution. Use bypass factor of next lower EWB for approximation.

Interpolation is permissible.

Correction Factor = 1.09 x (1 – BF) x (db – 80)

SHC CORRECTION FACTOR

BYPASS FACTOR	ENTERING AIR DRY–BULB TEMPERATURE °F (°C)					
	79 (26)	78 (26)	77 (25)	76 (24)	75 (24)	Under 75 (24)
	81 (27)	82 (28)	83 (28)	84 (29)	85 (29)	Over 85
	Correction Factor					
0.10	.098	1.96	2.94	3.92	4.91	Use formula shown below
0.20	0.87	1.74	2.62	3.49	4.36	
0.30	0.76	1.53	2.29	3.05	3.82	

PERFORMANCE DATA (cont)

ESTIMATED SOUND POWER LEVEL (dBA)*

UNIT SIZE	CONDITIONS		OCTAVE BAND CENTER FREQUENCY						
	CFM	ESP	63	125	250	500	1000	2000	4000
FV–002	400	0.25	63.0	59.0	55.0	52.0	50.0	48.0	44.0
	600	0.25	64.7	60.7	56.7	53.7	51.7	49.7	45.7
	800	0.25	66.0	62.0	58.0	55.0	53.0	51.0	47.0
	1000	0.25	67.0	63.0	59.0	56.0	54.0	52.0	48.0
	1200	0.25	67.8	63.8	59.8	56.8	54.8	52.8	48.8
	1400	0.25	68.4	64.4	60.4	57.4	55.4	53.4	49.4
FV–003	400	0.25	63.0	59.0	55.0	52.0	50.0	48.0	44.0
	600	0.25	64.7	60.7	56.7	53.7	51.7	49.7	45.7
	800	0.25	66.0	62.0	58.0	55.0	53.0	51.0	47.0
	1000	0.25	67.0	63.0	59.0	56.0	54.0	52.0	48.0
	1200	0.25	67.8	63.8	59.8	56.8	54.8	52.8	48.8
	1400	0.25	68.4	64.4	60.4	57.4	55.4	53.4	49.4
	636	0.25	65.0	61.0	57.0	54.0	52.0	50.0	46.0
FV–005	400	0.25	63.0	59.0	55.0	52.0	50.0	48.0	44.0
	600	0.25	64.7	60.7	56.7	53.7	51.7	49.7	45.7
	800	0.25	66.0	62.0	58.0	55.0	53.0	51.0	47.0
	1000	0.25	67.0	63.0	59.0	56.0	54.0	52.0	48.0
	1200	0.25	67.8	63.8	59.8	56.8	54.8	52.8	48.8
	1400	0.25	68.4	64.4	60.4	57.4	55.4	53.4	49.4
	1600	0.25	69.0	65.0	61.0	58.0	56.0	54.0	50.0
FV–006	600	0.25	64.7	60.7	56.7	53.7	51.7	49.7	45.7
	800	0.25	66.0	62.0	58.0	55.0	53.0	51.0	47.0
	1000	0.25	67.0	63.0	59.0	56.0	54.0	52.0	48.0
	1200	0.25	67.8	63.8	59.8	56.8	54.8	52.8	48.8
	1400	0.25	68.4	64.4	60.4	57.4	55.4	53.4	49.4
	1600	0.25	69.0	65.0	61.0	58.0	56.0	54.0	50.0
	1800	0.25	69.5	65.5	61.5	58.5	56.5	54.5	50.5
	2000	0.25	70.0	66.0	62.0	59.0	57.0	55.0	51.0
	2150	0.25	70.3	66.3	62.3	59.3	57.3	55.3	51.3

* Estimated sound power levels have been derived using the method described in the 1987 ASHRAE Systems & Applications Handbook, chapter 52, p. 52.7.

CFM – Cubic Ft Per Minute

ESP – External Static Pressure (in. w.c.)

RPM – Revolutions Per Minute

AIRFLOW PERFORMANCE CORRECTION FACTORS

HEATER kW	ELEMENTS	STATIC PRESSURE CORRECTION (in. wc)	
		Sizes 002–005	Size 006
0	0	+.02	+.03
5	1	+.01	+.02
8, 10	2	0	0
9, 15	3	–.02	–.03
20	4	–.04	–.06
18, 24, 30	6	–.06	–.10

The FV4C airflow performance table was developed using fan coils with 10–kW electric heaters (2 elements) in the units. For fan coils with heaters made up of a different number of elements, the external available static at a given CFM from the table may be corrected by adding or subtracting pressure. Use table for this correction.

FACTORY-INSTALLED FILTER STATIC PRESSURE DROP (in. wc)

UNIT SIZE	CFM								
	400	600	800	1000	1200	1400	1600	1800	2000
002	0.020	0.044	0.048	0.072	0.100	—	—	—	—
003	—	0.020	0.035	0.051	0.070	0.092	—	—	—
005	—	—	0.035	0.051	0.070	0.092	0.120	—	—
006	—	—	—	0.038	0.053	0.070	0.086	0.105	0.133

PERFORMANCE DATA (cont)

AIR DELIVERY PERFORMANCE CORRECTION COMPONENT PRESSURE DROP (IN. WC) AT INDICATED AIRFLOW (DRY TO WET COIL)

UNIT SIZE	CFM										
	600	700	800	900	1000	1100	1200	1300	1400	1500	1600
002	0.012	0.016	0.022	0.028	0.034	0.040	0.049	—	—	—	—
003	—	0.026	0.034	0.042	0.052	0.063	0.075	0.083	0.091	0.098	0.110
005	—	0.006	0.008	0.010	0.012	0.015	0.017	0.020	0.023	0.027	0.030
	CFM										
	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2100
006	0.013	0.016	0.018	0.020	0.023	0.027	0.030	0.034	0.039	0.044	0.048

UNITS WITHOUT ELECTRICAL HEAT

UNIT SIZE	VOLTS–PHASE	FLA	MIN CKT AMPS	BRANCH CIRCUIT	
				Min Wire Size Awg*	Fuse/Ckt Bkr Amps
002	208/230–1	4.3	5.4	14	15
003	208/230–1	4.3	5.4	14	15
005	208/230–1	4.3	5.4	14	15
006	208/230–1	6.8	8.5	14	15

* Use copper wire only to connect unit. If other than uncoated (non–plated) 75° C copper wire (solid wire for 10 AWG and smaller, stranded wire for larger than 10 AWG) is used consult applicable tables of the National Electric Code (ANSI/NFPA 70).

NOTE: If branch circuit wire length exceeds 100 ft, consult NEC 210–19a to determine maximum wire length. Use 2% voltage drop.

FLA — Full Load Amps

ELECTRIC HEATERS

HEATER PART NO.	kW @ 240V	VOLTS/ PHASE	STAGES (kW OPERATING)	INTERNAL CIRCUIT PROTECTION	FAN COIL SIZE USED WITH	HEATING CAP. @ 230V‡	INTELLIGENT HEAT CAPABLE†† (kW OPERATING)
KFCEH0501N05	5	230/1	5	None	All	15,700	—
KFCEH0801N08	8	230/1	8	None	All	25,100	—
KFCEH0901N10	10	230/1	10	None	All	31,400	—
KFCEH3001F15	15	230/1	5, 15	Fuses**	All	47,100	5, 10, 15
KFCEH3201F20	20	230/1	5, 20	Fuses**	All	62,800	5, 10, 15, 20
KFCEH2901N09	9	230/1*	3, 9	None	All	28,300	3, 6, 9
KFCEH1601315	15	230/3	5, 15	None	All	47,100	—
KFCEH2001318	18	230/3	6, 12, 18	None	All	56,500	—
KFCEH3401F24	24	230/3†	8, 16, 24	Fuses	005, 006	78,500	8, 16, 24
KFCEH3501F30	30	230/3†	10, 20, 30	Fuses	005, 006	94,200	10, 20, 30
KFCEH2401C05	5	230/1	5	Ckt Bkr	All	15,700	—
KFCEH2501C08	8	230/1	8	Ckt Bkr	All	25,100	—
KFCEH2601C10	10	230/1	10	Ckt Bkr	All	31,400	—
KFCEH3101C15	15	230/1	5, 15	Ckt Bkr	All	47,100	5, 10, 15
KFCEH3301C20	20	230/1	5, 20	Ckt Bkr	All	62,800	5, 10, 15, 20

* Field convertible to 3 phase.

† These heaters field convertible to single phase.

‡ Blower motor heat not included.

** Single point wiring kit required for these heaters in Canada.

†† Heaters designated with kW Operating Values are Intelligent Heat capable when used with corporate 2–speed programmable thermosta), Thermidistat™ Control, or Comfort Zone II.

ELECTRIC HEATER INTERNAL PROTECTION

HEATER kW	FUSES QTY/SIZE	CKT BKR QTY/SIZE*
5	—	1/60
8	—	1/60
9	—	—
10	—	1/60
15	2/30, 2/60	2/60
15	—	—
18	—	—
20	4/60	2/60
24	6/60	—
30	6/60	—

* All circuit breakers are 2 pole.

ACCESSORY ELECTRIC HEATER ELECTRICAL DATA

HEATER PART NO.	kW		PHASE	INTERNAL CIRCUIT PROTECTION	HEATER AMPS 208/230V			BRANCH CIRCUIT													
								Min Ampacity 208/230V**			Min Wire Size (AWG) 208/230V††			Min Gnd Wire Size 208/230V			Max Fuse/Ckt Bkr Amps 208/230V			Max Wire Length 208/230V (ft)‡‡		
					Single Circuit	Dual Circuit		Single Circuit	Dual Circuit		Single Circuit	Dual Circuit		Single Circuit	Dual Circuit		Single Circuit	Dual Circuit		Single Circuit	Dual Circuit	
	240v	208v				L1,L2	L3,L4		L1,L2	L3,L4		L1,L2	L3,L4		L1,L2	L3,L4		L1,L2	L3,L4		L1,L2	L3,L4
KFCEH0401N03	3	2.3	1	None	10.9/12.0	—	—	15.9/17.3	—	—	12/12	—	—	12/12	—	—	20/20	—	—	67/68	—	—
KFCEH0501N05[1]	5	3.8	1	None	18.1/20.0	—	—	26.0/28.4	—	—	10/10	—	—	10/10	—	—	30/30	—	—	66/66	—	—
KFCEH0501N05[2]	5	3.8	1	None	18.1/20.0	—	—	31.2/33.5	—	—	8/8	—	—	10/10	—	—	35/35	—	—	85/88	—	—
KFCEH2401C05[1]	5	3.8	1	Ckt Bkr	18.1/20.0	—	—	26.0/28.4	—	—	10/10	—	—	10/10	—	—	30/30	—	—	66/66	—	—
KFCEH2401C05[2]	5	3.8	1	Ckt Bkr	18.1/20.0	—	—	31.2/33.5	—	—	8/8	—	—	10/10	—	—	35/35	—	—	85/88	—	—
KFCEH0801N08	8	6.0	1	None	28.9/32.0	—	—	44.7/48.5	—	—	8/8	—	—	10/10	—	—	45/50	—	—	59/60	—	—
KFCEH2501C08	8	6.0	1	Ckt Bkr	28.9/32.0	—	—	44.7/48.5	—	—	8/8	—	—	10/10	—	—	45/50	—	—	59/60	—	—
KFCEH2901N09*	9	6.8	1	None	32.8/36.0	—	—	49.5/53.5	—	—	8/6	—	—	10/10	—	—	50/60	—	—	54/87	—	—
KFCEH2901N09*‡	9	6.8	3	None	18.8/20.8	—	—	32.0/34.5	—	—	8/8	—	—	10/10	—	—	35/35	—	—	83/85	—	—
KFCEH0901N10	10	7.5	1	None	36.2/40.0	—	—	53.8/58.5	—	—	6/6	—	—	10/10	—	—	60/60	—	—	78/80	—	—
KFCEH2601C10	10	7.5	1	Ckt Bkr	36.2/40.0	—	—	53.8/58.5	—	—	6/6	—	—	10/10	—	—	60/60	—	—	78/80	—	—
KFCEH3001F15*	15	11.3	1	Fuse	54.2/59.9	36.2/40.0	18.1/20.0	76.3/83.4	53.8/58.5	22.7/25.0	4/4	6/6	10/10	8/8	10/10	10/10	80/90	60/60	25/25	88/89	78/80	75/76
KFCEH3101C15*	15	11.3	1	Ckt Bkr	—	36.2/40.0	18.1/20.0	—	53.8/58.5	22.7/25.0	—	6/6	10/10	—	10/10	10/10	—	60/60	25/25	—	78/80	75/76
KFCEH1601315	15	11.3	3	None	31.3/34.6	—	—	47.7/51.8	—	—	8/6	—	—	10/10	—	—	50/60	—	—	56/90	—	—
KFCEH2001318	18	13.5	3	None	37.6/41.5	—	—	55.5/60.4	—	—	6/6	—	—	10/8	—	—	60/70	—	—	76/77	—	—
KFCEH3201F20*	20	15.0	1	Fuse	72.3/79.9	36.2/40.0	36.2/40.0	98.9/108.4	53.8/58.5	45.3/50.0	3/2	6/6	8/8	8/6	10/10	10/10	100/110	60/60	50/50	85/109	78/80	59/59
KFCEH3301C20*	20	15.0	1	Ckt Bkr	—	36.2/40.0	36.2/40.0	—	53.8/58.5	45.3/50.0	—	6/6	8/8	—	10/10	10/10	—	60/60	50/50	—	78/80	59/59
KFCEH3401F24*†	24	18.0	3	Fuse	50.1/55.4	—	—	71.2/77.8	—	—	4/4	—	—	8/8	—	—	80/80	—	—	94/95	—	—
	24	18.0	1	Fuse	86.7/95.5	—	—	116.9/127.9	—	—	1/1	—	—	6/6	—	—	125/150	—	—	115/116	—	—
KFCEH3501F30*†	30	22.5	3	Fuse	62.6/69.2	—	—	86.8/95.0	—	—	3/3	—	—	8/8	—	—	90/100	—	—	97/98	—	—
	30	22.5	1	Fuse	109.0/120.0	—	—	144.8/158.5	—	—	0/00	—	—	6/6	—	—	150/175	—	—	117/150	—	—

FIELD MULTIPOINT WIRING OF 24-AND 30-kW SINGLE PHASE

HEATER PART NO.	kW		PHASE	HEATER AMPS 208/230V			MIN AMPACITY 208/230V**			MIN WIRE SIZE (AWG) 208/230V††			MIN GND WIRE SIZE 208/230V	MAX FUSE/CKT BKR AMPS 208/230V			MAX WIRE LENGTH 208/230V (FT)‡‡		
	240V	208V		L1,L2	L3,L4	L5,L6	L1,L2	L3,L4	L5,L6	L1,L2	L3,L4	L5,L6		L1,L2	L3,L4	L5,L6	L1,L2	L3,L4	L5,L6
KFCEH3401F24*†	24	18.0	1	28.9/32.0	28.9/32.0	28.9/32.0	44.7/48.5	36.2/40.0	36.2/40.0	8/8	8/8	8/8	10/10	45/50	40/40	40/40	59/60	73/73	73/73
KFCEH3501F30*†	30	22.5	1	36.2/40.0	36.2/40.0	36.2/40.0	53.8/58.5	45.3/50.0	45.3/50.0	6/6	8/8	8/8	10/10	60/60	50/50	50/50	78/80	59/59	59/59

* Heaters are Intelligent Heat capable when used with the FV fan coil and Comfort Zone II™ or Infinity Control™.

† Field convertible to 1 phase, single or multiple supply circuit.

‡ Field convertible to 3 phase.

** Includes blower motor amps of largest fan coil used with heater.

†† Copper wire must be used. If other than uncoated (non–plated), 75°C copper wire (solid wire for 10 AWG and smaller, stranded wire for larger than 10 AWG) is used, consult applicable tables of the National Electric Code (ANSI/NFPA 70).

‡‡ Length shown is as measured 1 way along wire path between unit and service panel for a voltage drop not to exceed 2%.

NOTES:

1. For fan coil sizes 018–037.
2. For fan coil sizes 042–061 and all FE, FK and FV models.
3. Single circuit application of F15 and F20 heaters requires single–point wiring kit accessory.

ACCESSORIES

ITEM		ACCESSORY PART NO.*	FAN COIL SIZE USED WITH
1.	Disconnect Kit	KFADK0201DSC	Cooling controls and heaters 3– through 10–kW
2.	Downflow Base Kit	KFACB0201CFB	002
		KFACB0301CFB	003, 005
		KFACB0401CFB	006
3.	Downflow Conversion Kit	KFADC0201SLP	003
		KFADC0401ACL	002, 005, 006
4.	Single–Point Wiring Kit	KFASP0101SPK	Only with 15– and 20–kW Fused Heaters
5.	Filter Kit (12 Pack)	KFAFK0212MED	002
		KFAFK0312LRG	003, 005
		KFAFK0412XXL	006
6.	Fan Coil Filter Cabinet (Fan Coil Filter Media)	FNCCABCC0017 (FILCCFNC0017)	002
		FNCCABCC0021 (FILCCFNC0021)	003, 005
		FNCCABCC0024 (FILCCFNC0024)	006
7.	Infinity™ Air Purifier (Infinity™ Purifier Replacement Cartridge)	GAPABXCC1620 (GAPCCCAR1620)	002
		GAPABXCC2020 (GAPCCCAR2020)	003, 005
		GAPABXCC2420 (GAPCCCAR2420)	006
8.	PVC Condensate Trap Kit (50 pack)	KFAET0150ETK	All
9.	Air Cleaner 240–volt Conversion Kit	KEAVC0201240	All
10.	Downflow/Horizontal Conversion Gasket Kit	KFAHD0101SLP	All
11.	Airflow Sensor Kit (Air Cleaner)	KEAAC0101AAA	All
12.	ECM Motor Test	KFASD0301VSP	All
13.	Horizontal Water Management Kit (25 pack)	KFAHC0125AAA	All

* Factory authorized and listed, field installed.

Accessory Kits Description Suggested and Required Use

1. **Disconnect Kit**
   The kit is used to disconnect electrical power to the fan coil so service or maintenance may be performed safely.
   SUGGESTED USE: Units for 3- through 10-kW electric resistance heaters and cooling controls.
2. **Downflow Base Kit**
   This kit is designed to provide a 1-in. (25MM) minimum clearance between unit discharge plenum, ductwork, and combustible materials. It also provides a gap-free seal with the floor.
   REQUIRED USE: This kit must be used whenever fan coils are used in downflow applications.
3. **Downflow Conversion Kit**
   Fan coils are shipped from the factory for upflow or horizontal-left applications. Downflow conversion kits provide proper condensate water drainage and support for the coil when used in downflow applications. Separate kits are available for slope coils and A-coils.
   REQUIRED USE: This kit must be used whenever fan coils are used in downflow applications.
4. **Single Point Wiring Kit**
   The single point wiring kit acts as a jumper between L1 and L3 lugs, and between the L2 and L4 lugs. This allows the installer to run 2 heavy-gauge, high-voltage wires into the fan coil rather than 4 light-gauge, high-voltage wires.
   SUGGESTED USE: Fan coils with 15- and 20-kW fused heaters only.
5. **Filter Kit (12 pack)**
   The kit consists of 12 fan coil framed filters. These filters collect large dust particles from the return air entering the fan coil and prevents them from collecting on the coil. This process helps to keep the coil clean, which increases heat transfer and, in turn, the efficiency of the system.
   SUGGESTED USE: To replace filters in fan coils.
   REQUIRED USE: All units unless a filter grille is used.
6. **Fan Coil Filter Cabinet**
   This cabinet is mounted to the fan coil on the return air end and designed to slip over the outer fan coil casing. The cabinets are insulated using the same insulation as production fan coils. They are designed for the removal of particulates from indoor air using FILCCFNC00(14, 17, 21, 24) media filter cartridges. These fan coil media filter cartridge kits are designed for the removal of particles from indoor air. The cartridge is installed in the return air duct next to the air handler or further upstream.
   SUGGESTED USE: All fan coils.
7. **Infinity™ Air Purifier**
   The Infinity Air Purifier wires directly to fan coil and requires no duct transitions with Carrier units. These purifiers both capture and kill airborne viruses, bacteria, mold spores, and allergens. It comes with an airflow sensor. Maintenance is limited to replacement of the purification cartridge, GAPCCAR (1620/2020 or 2420), and inspection/brush cleaning of the ionization array.
   SUGGESTED USE: All fan coils.
8. **Condensate Drain Trap Kit**
   This kit consists of 50 PVC condensate traps. Each trap is pre-formed and ready for field installation. This deep trap helps the system make and hold proper condensate flow even during blower initiation.
   SUGGESTED USE: All fan coils.

9. **Air Cleaner 240-volt Conversion Kit**
   The AIRA electronic air cleaner comes ready for 115-v operation.
   REQUIRED USE: This kit is required when running 240-volt circuit to air cleaner.
10. **Downflow/Horizontal Conversion Gasket Kit**
    This kit provides the proper gasketing of units when applied in either a downflow (FE4A or FE5A) or horizontal (FE4A only) application.
    REQUIRED USE: Fan coils in either downflow or horizontal applications.
11. **Airflow Sensor Kit (Air Cleaner)**
    The AIRA electronic air cleaner comes ready for 115-v operation
    REQUIRED USE: This kit is required whenever an electronic air cleaner is used.
12. **ECM Motor Test Kit**
    Operates variable speed blower at several speeds independent of circuit board and wiring harness.
13. **Horizontal Water Management Kit**
    This kit provides proper installation of fan coils under conditions of high static pressure and high relative humidty.
    SUGGESTED USE: All fan coils.

 Printed in U.S.A. Edition Date: 06/09 **Catalog No: FV4C–01PD**

 Replaces: NEW

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Corporate Office:	626 NE 124th Street North Miami, FL 33161
Established:	2001
Licenses/Registrations:	Certified General Contractor (CGC 016729) Certified Roofing Contractor (CCC 041309)
DUNS:	103319617
CAGE:	4LWC2
Bonding:	Single - $2,500,000 Aggregate - $5,000,000
Bonding Agent:	Nielson, Hoover & Company, Inc. 8000 Governors Square Blvd., Suite 101 Miami Lakes, FL 33016 305-722-2663
FEIN:	65-1134265
Certifications:	EDWOSB, 8(a) Certified, HUBZone Certified, Small Disadvantaged Business, FDOT Certified Disadvantaged Business Enterprise, Certified Small Business Enterprise, Minority/Woman Business Enterprise, LEED ® AP

Primary NAICS:

236220 - Commercial and Institutional Building Construction

Secondary NAICS:

221119 - Other Electric Power Generation
236115 - New Single-Family Housing Construction (except Operative Builders)
236116 - New Multifamily Housing Construction (except Operative Builders)
236118 - Residential Remodelers
236210 - Industrial Building Construction
237130 - Power and Communication Line and Related Structures Construction
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237990 - Other Heavy and Civil Engineering Construction
238110 - Poured Concrete Foundation and Structure Contractors
238120 - Structural Steel and Precast Concrete Contractors
238130 - Framing Contractors
238140 - Masonry Contractors
238160 - Roofing Contractors
238190 - Other Foundation, Structure, and Building Exterior Contractors
238210 - Electrical Contractors and Other Wiring Installation Contractors
238220 - Plumbing, Heating, and Air-Conditioning Contractors
238310 - Drywall and Insulation Contractors
238320 - Painting and Wall Covering Contractors
238350 - Finish Carpentry Contractors
238910 - Site Preparation Contractors
238990 - All Other Specialty Trade Contractors
541350 - Building Inspection Services
561210 - Facilities Support Services

Current Projects

Department of the Army W912PX-12-C-0004
JIATF Interior Build Out Bldg. 289
Contract Amount $1,711,678.00
Sharon Keenan 305-293-5689
NAS Key West, FL
VOA
Michael Gove 407-541-0239

Department of the Navy N69450-12-M-4334
FY12 – Paint Various Buildings NAS Key West
Contract Amount $253,418.00
Renee Mims 305-293-2357
NAS Key West, FL
NAVFAC

2070 Lincoln Avenue
Remodel of apartments for Opa Locka Community Development Corp.
Stephanie Williams 305-687-3545
Opa Locka, FL
Contract Amount $1,422,622.00
Design2Form
Zamarr Brown 305-308-6303

15050 Duval Street
Remodel of apartments for Opa Locka Community Development Corp.
Contract Amount $1,658,767.00
Stephanie Williams 305-687-3545
Opa Locka, FL
Design2Form
Zamarr Brown 305-308-6303

Projects Completed

Department of the Navy N69450-12-C-4330
Mooring Eyes – Aircraft Tie Downs
Contract Amount $178,102.00
2013
Ileana Wolski 305-293-2359
NAS Key West, FL
NAVFAC

2060 Lincoln Avenue
Remodel of apartments for Opa Locka Community Development Corp.
Contract Amount $423,592.00
Stephanie Williams 305-687-3545
2013
Opa Locka, FL
Design2Form
Zamarr Brown 305-308-6303

Department of the Navy N69450-12-M-4317
F-5 Simulator Trainer Facility
Contract Amount $145,911.00
2012
Ileana Wolski 305-293-2359
NAS Key West, FL
NAVFAC

Tesla Motors on Lincoln Road
Interior Buildout
Cristina Moinelo 305-494-0944
Miami Beach, FL
Contract Amount $430,052.00

Department of Interior P11PC50975
Biscayne National Park Dive Locker Rehab
William Leady 305-242-7792
Homestead, FL
Contract Amount $123,134.71

U.S. Coast Guard CEU HSCG82-12-C-PMV008
Hillsboro Lighthouse Repairs
Ada Hoggard 305-278-6724
Pompano, FL
Contract Amount $236,000.00

Miami-Dade County GSA
Carol Donaldson Daycare Playground
Bann Williams 305-375-4052
Miami, FL
Contract Amount $91,000.00

Department of the Air Force FA6648-11-C-0012
Homestead Air Reserve Base Small Arms Training Range Cleaning
Marquita Moore 786-415-7472
Homestead, FL
2012
Contract Amount $16,900.00

Department of the Air Force FA6648-11-C-0012
Homestead Air Reserve Base Roof Repairs, Parapet, and Coping B178,B187, B360
Raquel Mingo 786-415-7403
Homestead, FL
2012
Contract Amount $198,707.00

US Southern Command W91QEX-11-P-0093
Installation of Glass Partitions
Michael Son 305-437-1842
Doral, FL
2011
Contract Amount $11,830.58

Department of Labor DOL1096300225
Miami Job Corps Center Solar Water Heating in Dormitories - Design/Build
Maria Pizarro 202-693-4578
Miami, FL
2011
Contract Amount $283,278.05

Miami-Dade Housing Authority
Gwen Cherry 6 & 7 UFAS Renovation to units
POC: Jorge Zaldivar 786-469-4129
Miami, FL
2011
Contract Amount $112,000.00

Joint Interagency Task Force South W912PX-10-C-0010
Interior Remodel at JIATFS Building
Renee Mims 305-293-5846
NAS Key West, FL
2011
Contract Amount $215,069.44

University of North Florida - Litecrete Inc.
Science Building Roof
Lina Valdez 305-500-9373
Jacksonville, FL
2011
Contract Amount $60,000.00

Marlins Stadium - Roberts Roofing
Marlins Stadium Sub Roof Installation
Bernardo Duran 305-885-5525
Miami, FL
2011
Contract Amount $250,000.00

General Service Administration GS-04P-10-LC-P-0029
ADA Push Buttons at USCIS Miami District Office
Kevin Pryer 305-536-5751
Miami, FL
2011
Contract Amount $10,800.00

Midtown Showroom Design/Build
Interior Build Out for Showroom
POC: Marcos Mizrahi - Architect 305-527-3220
Miami, FL
2010
Contract Amount $730,000.00

Miami-Dade Housing Authority
Jolivette UFAS Renovation to units
POC: Jorge Zaldivar 786-469-4129
Miami, FL
2010
Contract Amount $187,000.00

National Parks Service C5240100014
Resurfacing of unimproved roads for Congaree National Park
POC: Laurie Chestnut 404-507-5745
Hopkins, SC
2010
Contract Amount $144,000

Department of Labor E-418-2
Miami Job Corps Center Water Conservation
POC: Isabel Camacho 305-620-3124
Miami, FL
2010
Contract Amount $37,857.00

Department of Labor E-418-6
Miami Job Corps Center Window Replacement
POC: Isabel Camacho 305-620-3124
Miami, FL
2010
Contract Amount $17,891.00

Federal Aviation Administration DTAFASO-10-P-000488
Fence Installation at EYWE BLDG, Stock Island, FL
POC: Miguel Iglesias 305-716-1773
Stock Island, FL
2010
Contract Amount $6,427.00

Federal Aviation Administration DTFASO-10-R-00108
Construction of Access Roads/Parking area for the ILS Opa Locka, FL
POC: Miguel Iglesias 305-716-1773
Opa Locka, FL
2010
Contract Amount $19,700.00

National Parks Service C52501000020
Solar Project to replace generators at Ranger Station Island, Adams Key, FL
POC: Ken Ginger 786-335-3638
Adams Key, FL
2010
Contract Amount $409,823.00

National Parks Service P5250100031
Biscayne National Park Generator
POC: Ken Ginger 786-335-3638
Homestead, FL
2010
Contract Amount $70,750.00

Naranja Lakes LLC.
Community Center for Mandarin Lakes CRA
POC: Hal Johnson 786-229-4387
Naranja, FL
2009
Contract Amount $1,500,000.00

Miami-Dade County Public Housing Authority 146090-2010-#12
Job Order Contract for Misc. Repairs for HUD units
POC: Jorge Zaldiva 786-469-4129
Miami, FL
2009
Contract #1 Amount $90,000.00
Contract #2 Amount $42,950.00

Baker Concrete Construction
Miami Intermodal Center Misc. Flatwork
POC: Tony Cotter 305-884-7793
Miami, FL
2009
Contract Amount $453,000.00

Litecrete Inc.
Riverwood Condominium Association Roof Repair
POC: Lina Valdez 305-500-9373
Miami, FL
2008
Contract Amount $900,000.00

Miami-Dade Seaport
New Sidewalks at the Port of Miami
POC: Lokhman Kamaruddin 305-812-2666
Miami, FL
2008
Contract Amount $135,000.00

Miami-Dade Aviation Department
MIA Heliport Roof Resurfacing
POC: Darryl Palmer 305-876-7565
Miami, FL
2007
Contract Amount $686,000.00

Hensel Phelps
Miami International Airport Concourse J Misc. Masonry Work
POC: Brian Davis 305-871-6169
Miami, FL
2007
Contract Amount $1,400,000.00

STATE OF FLORIDA

DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CONSTRUCTION INDUSTRY LICENSING BOARD (850) 487-1395
1940 NORTH MONROE STREET
TALLAHASSEE FL 32399-0783

BICHACHI, MOISES B
E.L.C.I. CONSTRUCTION GROUP, INC.
1075 NORTH SHORE DRIVE.
MIAMI BEACH FL 33141

Congratulations! With this license you become one of the nearly one million Floridians licensed by the Department of Business and Professional Regulation. Our professionals and businesses range from architects to yacht brokers, from boxers to barbeque restaurants, and they keep Florida's economy strong.

Every day we work to improve the way we do business in order to serve you better. For information about our services, please log onto **www.myfloridalicense.com**. There you can find more information about our divisions and the regulations that impact you, subscribe to department newsletters and learn more about the Department's initiatives.

Our mission at the Department is: License Efficiently, Regulate Fairly. We constantly strive to serve you better so that you can serve your customers. Thank you for doing business in Florida, and congratulations on your new license!

STATE OF FLORIDA AC# 6233792
DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION

CGC016729 07/30/12 128022839

CERTIFIED GENERAL CONTRACTOR
BICHACHI, MOISES B
E.L.C.I. CONSTRUCTION GROUP, INC

IS CERTIFIED under the provisions of Ch.489 FS
Expiration date: AUG 31, 2014 L12073001377

DETACH HERE

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AC# 6233792

STATE OF FLORIDA

DEPARTMENT OF BUSINESS AND PROFESSIONAL REGULATION
CONSTRUCTION INDUSTRY LICENSING BOARD

SEQ# L12073001377

DATE	BATCH NUMBER	LICENSE NBR
07/30/2012	128022839	CGC016729

The GENERAL CONTRACTOR
Named below IS CERTIFIED
Under the provisions of Chapter 489 FS.
Expiration date: AUG 31, 2014

BICHACHI, MOISES B
E.L.C.I. CONSTRUCTION GROUP, INC.
626 NE 124TH STREET
NORTH MIAMI FL 33161

RICK SCOTT
GOVERNOR

KEN LAWSON
SECRETARY

DISPLAY AS REQUIRED BY LAW

Experience and Credentials of SSHO

Sandra Fletcher
Lehigh Acres, Florida
(239) 601-6495
Sss4041@aol.com

♦

Career objective: Continue my professional level career in the construction industry utilizing my background and Experience as a SSHO/Safety Manager/Trainer.

Occupational Health & Safety:

- Develop, maintain and update emergency response plans and other occupational health and safety programs designed to eliminate, control and prevent on-the-job injuries and disease.
- Visit multiple job sites and by using relevant information and individual judgment, determine whether events or processes comply with laws, regulations, or standards.
- Recommend measures to help protect workers from potentially hazardous work methods, processes, or materials.
- Investigate accidents to identify causes and to determine how such accidents might be prevented in the future.
- Inspect and evaluate workplace environments, equipment, and practices, in order to ensure compliance with safety standards and government regulations.
- Collaborate with engineers, project managers and supervisors to institute control and remedial measures for hazardous and potentially hazardous conditions or equipment.
- Collect samples of dust, water, gases, vapors, and other potentially toxic materials for analysis.
- Develop material and facilitate training for new and current employees, such as flagging, OSHA 10hr/30hr, CPR, heavy equipment, competent person and construction.
- Implement, supervise and enforce MOT regulations and procedures.
    - Being Intermediate Maintenance of Traffic Qualified (PTC-MOT 24616) I have had the responsibility of designing, submitting for approval. Set up and maintenance of numerous MOT plans, and provided training for employees. Some of the projects I have worked on are…
    - Fort Myers Downtown Utility Replacement and Streetscape Improvements Project,(54-block scope of 4-year renovation-believed to be one of the largest projects of its kind in the United States),
    - Widening of I-75 (IROC)(a $400-million-plus multiyear project –
    - Apollo waterway road closure

Project Management:

- Confer with supervisory personnel, owners, contractors, and design professionals to discuss and resolve matters such as work procedures, permitting, complaints and construction problems.
- Inspect and investigate sources of storm water pollution, including turbidity testing to ensure conformance with Federal and local regulations and ordinances.
- Take necessary actions to deal with the results of delays, bad weather, or emergencies at construction site.
- Inspect and review projects to monitor compliance with building and safety codes, and other regulations.
- Contract procurement/estimations:

- Consult with clients, vendors, personnel in other departments or construction foremen to discuss and formulate estimates and resolve issues.
- Conduct special studies to develop and establish standard hour and related cost data or to effect cost reduction.
- Review material and labor requirements to decide whether it is more cost-effective to produce or purchase components.

Work History:

- Executive Assistant/Sr.Trainer/SSHO/CQM:U.S.Safety 7/09-2/24/13
- SSHOEM(NAVFAC) Subcontracted to NCM Demolition Guatamano, Cuba
- SSHO(NAVFAC) Subcontracted to Head, Inc. Boca Chica Naval Air station
- SSHOEM (USACE) (Subcontracted to Tito Construction)
- Safety Director/SSHO/Environmental Manager : Dave Foote Environmental, 11/06 to 5/18/09
- Office Mgr/Project Mgr. Assistant/Safety WPM Southern, Florida 2/04/03 to 10/31/06
- Staffing Mgr/Trainer/Disaster Action team Supervisor: American Red Cross
- Project Manager/Safety Trainer: Sal's Inc. Fall River, MA

Education and Certifications:

- Construction Safety Hazard Awareness USACE EM 385 1-1(Instructor)(4 years)
- Construction Quality Management (Army Corp of Engineers)
- Certification: Intermediate Maintenance of Traffic Qualified(Instructor) PTC-MOT 24616
- Certification: Storm Water Management Inspector, FDEP #18975
- Authorized: OSHA 500 (Construction) Instructor 10/30 hour (7 years)
- Authorized: OSHA 501 (General Industry) Instructor 10/30 (3.5 years)
- Certification: CPR/First Aid/AED Instructor, American Red Cross (10 years)
- Certification: Excavation Competent Person, NUCA/OSHA
- Certification: Confined Space, OSHA
- Certification: ITE, Sunshine Florida

Personal Work Philosophy and Career Ambitions

Construction is a non-traditional occupation for women and I take pride in the fact I am willing to visit job sites, roll-up my sleeves and work as part of a team. I have had the opportunity to combine my vast experience in construction, my passion to provide and teach Safety and have worked on some exciting jobs as a SSHO and Safety officer

References

Joseph Tavares (USACE) 904-232-3446
Anthony Santana (USACE) 800-291-9405
Robert Alvarez (Sr. Engineer/PM) 239-601-5815
Craig Humble (SSHOEM) (Treviicos) 239-770-7843
Steve Friar (INEOS Bio) 770-408-8834
Dean Ramineh (Manhattan) 239-206-0479

A few of my recent projects

NCM Demolition – SSHO(NAVFAC) – Guantanamo Bay Cuba – Demolition and lead Abatement

As SSHO I was responsible for the prevention of accidents and injuries to employees. Also included in my duties:

- Identify safety compliance or non-compliance by inspecting project site and working environment.
- Identify personal safety compliance or non-compliance by observing employees' and subcontractors' use of protective equipment.
- Prepared employees by developing and conducting safety training orientation classes and coaching employees.
- Assured safety equipment's' proper functioning by inspecting and testing.
- Inspected and evaluated work areas for hazards and unsafe working conditions and took corrective action as needed. .
- Responsible for contractors' and sub contractors' compliance with OSHA & EM 385 1-1.
- Develop and implement MOT plan to protect Public, Employees and Government Personnel

Ineos Bios -
As Owners' Representative for Safety, I was responsible for overseeing the general contractor and sub-contractors' safety compliance from demolition to construction of a Bio-Energy Plant in Vero Beach, FL.

Also included in my duties:

- Worked as a member of the INEOS's project team of construction consultants to accomplish a successful project.
- Insured all contractors' compliance to published HSE programs for the site and regulatory issues throughout the project.
- On site at all times while work was being performed to provide safety and occupational health management, surveillance, inspections and safety enforcement for INEOS Bio/INPB.
- Performed daily audits of GC and sub-contractors' safety compliance.
- Performed independent accident investigations and reviewed GC's investigations and made recommendations for corrections.
- Trained INEOS's Employees in OSHA Construction & General Industry regulations.
- Supervised H2 hazards for drilling operations.

- Supervised INEOS Commissioning team after GC handed over responsibilities to INEOS.

Head, Inc. – SSHO - 01/12 to 05/12

Z-FY11 Airfield Repairs, Naval Air Station, Key West, Florida

Work consisted of mill & overlay to a portion of Taxiway Alpha - mill & overlay Taxiway Charlie - mill & overlay Taxiway Bravo - crack seal Taxiway Foxtrot - crack seal runway 07-25 including midfield intersection - crack seal runway 13-31.

As the SSHO I was responsible for the prevention of accidents and injuries to Employees. Also included in my duties:

- Earned runway driver's license to provide escort to vehicles, equipment and employees entering and exiting active runways.
- Develop and implement MOT plan to protect civilian and non-civilian personnel and provide escort for all equipment and vehicles working on runway
- Identify safety compliance or non-compliance by inspecting project site and working environment.
- Identify personal safety compliance or non-compliance by observing employees' and subcontractors' use of protective equipment.
- Prepared employees by developing and conducting safety training orientation classes and coaching employees.
- Assured safety equipment's proper functioning by inspecting and testing equipment.
- Inspected and evaluated work areas for hazards and unsafe working conditions and take necessary corrective action.
- Investigated accidents, file reports and analyze nature of accident to determine cause and necessary corrective action, provided re-training as necessary.
- Responsible for contractors and sub-contractors compliance with OSHA & EM 385 1-1.

Smith Fence-Ornamental Fence replacement-NAVFAC/City of Key west

Repair and replacement of ornamental fencing and Pilasters. Plus installation of new gates located of U.S. Navy properties Truman Annex and Trumbo point in the city of key West.

As SSHO I was responsible for the prevention of accidents and injuries to employees. Also included in my duties:

Identify safety compliance or non-compliance by inspecting project site and working environment.

- Identify personal safety compliance or non-compliance by observing employees' and subcontractors' use of protective equipment.
- Prepared employees by developing and conducting safety training orientation classes and coaching employees.
- Assured safety equipment's' proper functioning by inspecting and testing.
- Inspected and evaluated work areas for hazards and unsafe working conditions and took corrective action as needed. .
- Responsible for contractors' and sub contractors' compliance with OSHA & EM 385 1-1.
- Develop and implement MOT plan to protect Public, Employees and Government Personnel

Tito Construction – Position: SSHO & Alternate QC Manager - 08/2010 to 11/11

USACE - Rehabilitation of recreation areas - St. Lucie Locks, Franklin Locks and Ortona Locks –Work consisted of asphalt milling, paving and miscellaneous concrete work.

As SSHO I was responsible for the prevention of accidents and injuries to employees. Also included in my duties:

- Identify safety compliance or non-compliance by inspecting project site and working environment.
- Identify personal safety compliance or non-compliance by observing employees' and subcontractors' use of protective equipment.
- Prepared employees by developing and conducting safety training orientation classes and coaching employees.
- Assured safety equipment's' proper functioning by inspecting and testing.
- Inspected and evaluated work areas for hazards and unsafe working conditions and took corrective action as needed.
- Investigated accidents, filed reports and analyzed nature of accident to determine cause and necessary corrective action and provided re-training as necessary.
- Responsible for contractors' and sub contractors' compliance with OSHA & EM 385 1-1.
- Develop and implement MOT plan to protect Public, Employees and Government Personnel

As alternate QC Manager – my responsibilities were:

- To administer the QC program for the project in the absence of the QC Manager.
- Provide continuous inspection of the project to insure compliance with the contract plans and specifications.
- Assisted in the review and coordination of shop drawings, certifications, submittal data and other documents required.
- Review and coordinate field testing and inspections required by the specifications in the absence of the QC Manager.
-

Past/Recent Accomplishments

- I have also in my career have provided Safety Compliance for the construction of several schools in both Lee and Collier County,
- Target and Lowes in Naples,
- Fort Myers Downtown Utility Replacement and Streetscape Improvements Project,(54-block scope of 4-year renovation-believed to be one of the largest projects of its kind in the United States),
- The widening of I-75 (IROC)(a $400-million-plus multiyear project - it was the state's largest highway project ever.)
- New VA hospital in Cape Coral, Florida
- I have provided several OSHA 30 & 10 hour, CP Confined Space and Excavation Classes for the GC of the Miami Tunnel Project
- I have provided training for the City of Marco Island and CityFort Myers
- Provided Confined Space CP training for USACE Employees at the Power House Dam, Chatahooche, Fl.
- To name just a few

Experience and Credentials of QCM

Don Giberson
dongiberson@yahoo.com
http://www.linkedin.com/in/dongiberson1
(850) 485-5874

EXECUTIVE PROFILE

- Accomplished & Awarded 18 Years of Strong Expertise in Federal Project Management of Facilities & Infrastructure in a Full Operations & Control Capacity, to the Delivery Closeout of Large Multimillion Dollar Commercial & Federal Construction Contracts with a Demonstrated Success of More than 637M of Construction in Place to Date. Optimized & Increased Profit & Control of Yearly 2M Facilities Budget with Hands-On, and "in the field" Facilities/Personal Subcontract Management Style. A Strong History in Contract & Field Project Management from Regional USACE/NAVFAC CQCM to Field Design Build QA Management of a New 300 Million Dollar Casino in Atmore, Ala.

CORE COMPETENCIES

- Facilities Operation & IDIQ Contract Management: Maintenance & IDIQ Subcontracts Multi-Housing Complex & Base Hotel Facilities Management | Federal Construction Management | Regional Construction Army Corps of Engineers Quality Control Manager | New Build Quality Control & ICC Trade Enforcement Management of WindCreek Casino Design Build | & Facilities/Operations Manager of a 25M Housing Community Build

* Extensive Federal/USACE Corps & NAVFAC Contract Project & Management Experience:

- 100% Successful Completion of Many Federal Projects from a National Park Renovation in Pea Ridge Arkansas, Complete Cryptology Training Center Building Renovations, and Central Command Buildings; to Successfully Drafting a Recently Approved 2.7M Value Engineered Change Proposal.
- Ground-Up Experience: Managed Naval Renovation & New Build Projects for Facilities, & Yearly Budget Execution for all Naval Bases Enlisted, Officer Housing Neighborhoods, & Base Maloney Inn Hotel. Managed Naval Facilities Subcontracts & RFP Task Order Deliveries. Oversight of Facilities Maintenance IDIQ Subcontract Inspections.

* Results→ * Lakehurst NAES Outstanding Employee Award→ 2 Years, * Dept. of the Navy /Commander of Naval Installations, Best in the Industry "A" List Award, *100% Career Contracts are Above Average or Outstanding in Contract Performance Reviews.

CAREER ACCOMPLISHMENTS:

- →ARRA Chiller Renovation & 8A/NAVFAC Potable Water Distribution, Pensacola, Fla., 2011-Current
  - Developed Div.1 ARRA Chiller & Cooling Tower Replacement Contract CQC Requirements
  - Support & Verify Spec. During Field Construction Phasing & Production Meetings
  - Conduct 3 Phase Control Corp CQC Program, & Draft all CQC & Required Spec. Documentation.
  - Coordinate Final Commissioning & A&E Warranty Turn-Over Closeouts.

- → Federal Contracts Project MANAGER/CORPORATE CONSTRUCTION CQC DIRECTOR, Pensacola, Fla., 2009-2011
  - RFP Bid Package Development, Subcontract & Field Operations Management, to Final Closeout of Contracts under USACE Spec. Guideline Requirements.
  - Excelled in USACE Corps & NAVFAC Field Management Operations Training to Include; RMS & NAVFAC Daily Reporting for Field Superintendents & CQC Staff on Federal Construction Contracts.
  - Coordinated Final Subcontractor Bids & Developed Final Technical Proposal Best Value Offers.

- Developed CSI Division 1 Submittals for S.E. Regional Federal Contracts: →All Safety Plans, Quality Control Plans, Environmental & Abatement Plans.
- Managed Design Build & Division 1 Plan Bid Development to Final 100 % Project Submittal Closeout Turnover & Approval.
- Knowledge of Buy America Act & UFC & LEED Contract Performance Requirements.

➢ → <u>WindCreek Casino and Hotel Design Build, Field Architectural & Mechanical Quality Control/ICC Enforcement Manager, Atmore, Ala. 2008</u>

- $300M Design Build Casino w/16 Floor Hotel & Convenience/Gas Station.
- Contracted Build Term for Oversight of QC Assurance for Architectural & Mechanical Design Build ICC Enforcements.
- Managed Casino As-Builts on Architectural & MEP Trade Specs of Contract.
- Documented all Requests for Information, & Change Orders with Architectural & Mechanical Field & Subcontractor Personnel for Creek Indian Enterprise.
- Conducted all Fire-Caulking Inspections on Casino & High Rise Areas.
- Verified all Elevator Testing, as well as Casino Fire Control Device Install Inspections.
- Verified all Architectural & Mechanical Material as per Approved Submittals.
- Provided all Field Photographic Spec. Testing Verification Reports.

➢ → <u>USACE/NAVFAC Division Project Manager, EEG Construction, CQC Corporate Program Manager/ Regional Panhandle Office , Pensacola, Fla. 2004-08</u>

- Directed RFP Technical Spec. Requirements for Bid Packages Development.
- Documented FAR Clause on REA Claims & Contract Cost Recovery→ Recovered Over $3M UNDER 3 weeks Time Spent Researching for Equitable Contract Adjustments Awarded to Company.
- Directed Training & Field Management USACE Start up Support on all Area Corps & NAVFAC Contracts.
- Directed Contract Bid Solicitation & Tracking for Monthly CPM Schedule Updates
- Conducted Design Meetings & Ensured that Spec., Contract Line items, & Budget Ceilings were Enforced.
- Managed Corporate Project Expenditures & Monthly Project Costs.
- Successful Project Management Direction over Regional Design Build Contracts.
- Oversight of all Subcontractor Task Order Execution from Subcontract Evaluation, to Final Punch List Verification & Contract Closeout Performance of Multiple State Contracts at Once.
- Controlled all Monthly Project Invoicing & CPM Schedule.

➢ → <u>Facilities Operations Manager/Maintenance IDIQ Contract QA Surveillance, Lakehurst Naval Air Engineering Station, N.J., 2000-04</u>

- Inspection Liaison Representative for Milcon Funded $25M New Housing Development & Renovation.
- Developed Naval Housing Committee on Community Architectural Design for New Housing Community.
- Managed NAES Annual 2M DOD Budget for all Housing & Facilities & Maloney Inn Hotel
- Conducted all Facility Maintenance IDIQ Subcontract Inspections.
- Coordinated Subcontractor & Outside Building Vendor Contracts on all Facility & New Build Venture Capital Government Expenditures for DOD Housing.
- Managed Yearly DOD Housing Budget & Capitol Improvement Operations.
- Coordinated NAES Payment to State Government Offices for Base Utilities.

- Reported at all Weekly Base Command Meetings for Base Facility & Housing Department Updates.
- Administered Housing Quality of Life Board Committee

➢ → DOD Facilities/Construction Inspections Manager, NAES, Lakehurst, N.J., 1998-2000

- Scheduled & Administered Facility Site Inspection & PM Reports with Maintenance/Construction Contractors to Ensure Adherence to Contract Specs.
- Directed Housing & New Housing Development Capital Cost Budgets.
- Set up PM & IDIQ Scheduling Tracking /QA Inspections over NAES Facilities Maintenance Contract.
- Conducted all Maintenance Contract Field Inspections & Ensured all Deficiencies were corrected from Punch List to all MEP/Security/Fire & Commissioning Criteria.
- Directed all Maintenance Subcontracts & Enforced all Final Accepted Government Operations Subcontracts.
- Conducted QC & Production Meetings with Subcontractors & Outside Building Vendors.
- Government Inspection Liaison Representative for Congressional Funded New NAES Housing Neighborhood Design Build Award.

➢ → Responsibility also included: Housing Resident Relations Manager

- Directed Naval Housing Quality of Life Board, Coordinated all Tenant & Community Board Meetings.
- Developed Safety Measures after 9/11 for all Officer & Enlisted NAES Housing Residents.
- Conducted Briefings & Generated QA & Facility Operation Reports.
- Received Night Out Against Crime Neighborhood Community Award.

➢ → Owner of Maintenance Service Contract, NAES Lakehurst & Earl Naval Weapons Depot, Ft. Monmouth N.J., 1996-98

- Owned/Operated Clean up & Demo Operations for all Maintenance Facilities Contracts.
- Managed all Demo & Post Renovation Clean-Up of Housing Facilities.
- Ensured all Facilities & Unit Renovations were Inspection Ready after Interior Abatement & Demolition.
- Execution of O.S.H.A. & EM385 Health & Safety & Environmental Regulations.
- Evaluated Maintenance Discrepancies for Follow-up and Re-work.

EDUCATION:

- Army Corps of Engineers Diploma (USACE)
- O.S.H.A. Safety—University of West Florida, 2007
- The Chubb Institute- New Brunswick, NJ 1997-98
- Ocean County College – Toms River, NJ 1994-97
- Lipperts Business College – Plainview, Texas 1986-88

➢ **Continuing Education / Certification Courses:**

1) DOD Project Operations Management Software, 2) USACE Diploma, 3) OSHA Safety Certified, 4) Microsoft Certified Data Center Operations Support/Admin Diploma 5) Government Contract Administration Software Management Tools Include: Project Start Up, Sub-Contract Management Spreadsheets, & Cost Analysis. Knowledge Base in all Windows, MS Office, MS Project, Primavera/ Sure-track, P6 Schedule Implementation, & RS Means. Strong Expertise of Contract Plan Development/Writing of All; Quality Control, EM 385 Safety, OSHA, HAZMAT, Environmental, & Abatement Project Startup Plans

- **(7) YEAR EXCEPTIONAL PERFORMANCE REVIEW OF CONTRACTS COMPLETED PORTFOLIO:**

- ARRA Chiller Plant & Mechanical Renovation & DDC Install, 2011-2012
- Under Bay HDD Tie-In to Main Side County Water Supply Replacement, NAS Pensacola, 2010
- Hanger & Instruction Training Center, Stewart Air National Guard, NY., 2010
- I.D.I.Q., Maintenance Contract Project Management, NAS Pensacola, 2010
- NEXCOM Warehouse Distribution Center, NAS Pensacola, 2010
- Childcare Development Center Design Build, NCBC, Gulfport, MS., 2009-2010
- National Park Visitor's Center, Pea Ridge, Arkansas, 2009-2010
- B366 Chapel Design Build , Gulfport Naval Seabee Battalion Command, 2009
- WindCreek Casino & Hotel & Convenience Store/Gas Station, C.I.E. Development, Atmore, Ala. 2008
- B3744 & B3748 Center for Cryptology Warfare Training Command, NAS Corry Field, FL., 2006-2007
- B1500 Naval International Educational Training Center, NAS Pensacola, 2006
- B684, Hazmat Storage & Control Facility, NAS Pensacola, 2005-2006
- B38 & 73 Hanger Renovation, NAS Pensacola, 2005-2007
- Officers Club-(2) Training Command Centers, Maxwell AFB, Montgomery, Ala., 2006
- B628 Headquarters of Naval Education & Training Command, NAS Pensacola, 2005-06
- B624 NAS Central Command Build Headquarters Renovations, NAS Pensacola, 2005-06
- B781, Personnel Support Detachment Command Center, NAS Pensacola, 2005
- B3957 Command Recreation & Ball Park Pavilion, NAS Pensacola, 2005-06

Experience and Credentials of CA Firm

Construction management services

AMEC has a nationwide network of experienced construction services staff to perform supervision, inspection, and oversight of environmental and traditional construction projects including projects related to fuels, force protection, information technology, and unexploded ordinance.

AMEC has performed on-site construction management and construction inspection services on federal, municipal, and commercial projects worldwide. Many of these projects have involved the establishment of long-term field offices through which we have provided day-to-day oversight and support to the project throughout construction. Our projects include dams, tunnels, bridges, pavements, water and sewer facilities, airports, parking structures, marine structures, and industrial, commercial, institutional, and residential buildings.

Key Services

- Review of Design Documents & Plans
- Updates & Maintenance of Design Documents
- On-Site Technical Inspections & Assessment of Field Operations
- Integrated Management Oversight
- Routine, Pre-Final & Final Inspections
- Review of Construction Submittals
- Responses to Jobsite Concerns
- Administration of Construction Bidding
- Value Engineering
- Planning & Performance Scheduling
- Engineering Services
- Sampling/Materials Testing
- Quality Assurance/Quality Control (QA/QC) Programs
- Project Administration
- Arbitration & Claims Services
- Qualified Engineering Witness Support

AMEC has a nationwide network of experienced construction services staff to perform supervision, inspection, and oversight of environmental and traditional construction projects including projects related to fuels, force protection, information technology, and unexploded ordinance.

Our staff coordinates work site activities to ensure the protection of human health and the environment; the prevention of damage to property, utilities, materials, supplies, and equipment; and the avoidance of work interruptions. We have extensive experience in preparing and executing construction quality plans including review and monitoring of contractor quality control plans and the preparation and execution of construction quality assurance plans, regulatory constraints, and technical requirements.

If you would like more information about AMEC's services, please contact:

Michael Holm, PE

AMEC Environment & Infrastructure

michael.holm@amec.com

904.391.3762

Construction support services

The end product in construction depends on the quality of materials, construction practices, and the level of care and quality control in the construction process.

AMEC's registered engineers and certified technicians provide comprehensive consulting, engineering, testing, and monitoring services by applying sound theoretical concepts of the behavior of construction materials under virtually every conceivable condition.

Key Services

AMEC provides the following Construction Materials Testing (CMT) Services to a wide range of projects:

- Construction Specification
- Quality Assurance/Quality Control Programs
- Comprehensive Testing & Inspection Plans
- On-Site (Mobile) Laboratories
- Soil & Concrete Testing
- Asphalt Concrete Testing
- Non-Destructive Testing
- In-Situ Materials Evaluations
- Post-Tensioned/Pre-Stressed Concrete Testing
- Masonry Testing
- Structural Steel Testing/Inspection
- Fire Proofing Evaluation
- Aggregates Testing
- Specialty Laboratory Testing
- Underground Storage Tank Closure

Our projects include dams, tunnels, bridges, pavements, water and sewer facilities, airports, parking structures, marine structures, and industrial, commercial, institutional, and residential buildings.

On-Site Quality Control and Quality Assurance

- Construction Dewatering Evaluation
- Materials Evaluation
- Earthwork Monitoring
- Vibration & Blast Monitoring
- Excavation Bracing Systems Review
- Special Inspections
- FDOT Construction Engineering & Inspection
- Value/Cost Engineering
- Construction Management
- Mix Designs

Structural Steel and Inspection Services

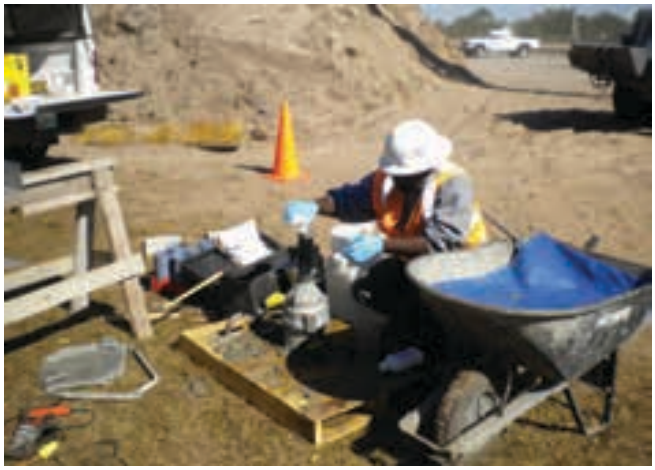
- Visual Weld Inspection
- Non-Destructive Testing
- High Strength Fastener Installation Inspection
- Welder Qualification & Procedure Review
- Field Coating Inspection
- Stud Welding Inspection

Earthwork, Soils, and Aggregates Testing

- Soil, Subgrade & Backfill Compaction Monitoring
- Foundation & Pile Construction Monitoring
- Moisture-Density Curves
- Permeability
- Atterberg Limits/Sieve Analysis
- California Bearing Ratio (CBR)/Limerock Bering Ratio (LBR)
- Soil/Lime/Cement Mix Designs
- Alkali Aggregate Reactivity (AAR)
- Aggregate Qualification

Asphalt Testing

- Asphalt Plant Quality Assurance Testing
- Marshall & Superpave Compliance
- Compaction/Thickness Coring
- Extraction/Gradation
- Mix Designs



If you would like more information about AMEC's services, please contact:

Michael Holm, PE

AMEC Environment & Infrastructure

michael.holm@amec.com

904.391.3762

An introduction to AMEC Florida:

We have a strong reputation for balancing global excellence with local delivery.

With annual revenues of more than $5.2 billion, AMEC designs, delivers, and maintains strategic and complex assets for its customers. The company employs more than 29,000 people in around 40 countries worldwide in three main divisions – Natural Resources, Power & Process, and Environment & Infrastructure.

Headquartered in Atlanta, Georgia, AMEC Environment & Infrastructure, Inc. is an environmental consulting, engineering and design, and construction company operating with more than 4,600 professionals in 115 locations across the United States. Serving the clean energy, federal, industrial/commercial, mining, oil and gas, transportation, and water sectors, we provide services to both public and private clients worldwide. This entity is part of a larger division of AMEC plc, a publically traded company based in London.

AMEC's Florida operation employs more than 500 people in offices located in every region of the state. We can draw on our experienced local managers and geographical reach to support the needs of clients, regardless of project size and complexity. AMEC's depth of global resources allows us to provide our clients with innovative solutions engineered to fit perfectly with your business challenges.

AMEC's Florida operation offers full-service solutions to clients throughout North America and internationally. We are dedicated to the consistent achievement of industry leading standards of excellence in consulting, including:

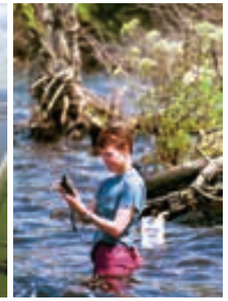
- Building Sciences
- Civil Engineering
- Ecological Services
- Emergency Management
- Environmental Services
- Geotechnical Engineering
- Materials Engineering
- Mining
- Survey and Mapping
- Water Resources

AMEC's Florida operation is home to many of the most talented and dedicated individuals serving the engineering and scientific communities today. We are renowned for our expertise and professionalism, our sustainable integration of engineering and science methodologies, and our innovative approaches to finding solutions which fit within the complexities of any project assignment.

AMEC Florida:

Office locations throughout the state

AMEC has 14 full-service offices in the state. Our staff brings specialized Florida knowledge and experience to our clients with aided service delivery driven by AMEC's expansive financial, project management, and IT systems. Utilizing these combined services allows us to draw on vast resources of personnel and experience to meet our clients' needs.



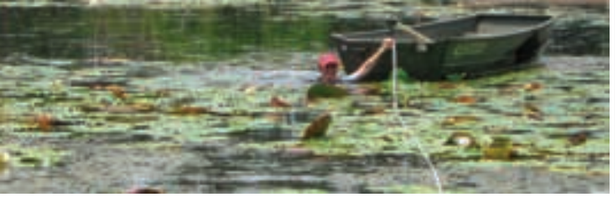
Contact details

AMEC
5845 NW 158th Street
Miami, Florida 33014
305.826.5588

amec.com

An introduction to AMEC

World skills on your doorstep




Environment & Infrastructure Services

Building Sciences
- Architectural Renovations
- Architectural Services
- Asbestos Services
- Coatings
- Environmental Pollution Analysis
- Fireproofing Inspection
- Forensic Investigations
- Facility Due Diligence
- Indoor Air Quality/Mold
- Lead-Base Paint Services
- Materials Failure Analysis
- Roofing & Waterproofing
- Structural Engineering

Civil Engineering
- Design-Build Services
- Land & Site Development
- Parks & Recreational Facilities
- NPDES Program Management
- Redevelopment & Revitalization
- Stormwater Management
- Regulatory Permitting
- Stormwater Utility/Special Assessments
- Structural Design
- Transportation Engineering
- Utilities Engineering

Ecological Services
- Adaptive Habitat Management for Flora & Fauna
- Biological Assessments
- Biological, Hydrologic & Water Quality Monitoring
- Ecological Restoration
- Ecosystem & Statistical Modeling
- NEPA Services
- T&E Species Services
- Threatened & Endangered Species Mapping, Surveying & Relocation
- Water Quality Sampling
- Wetland Delineation, Permitting, Mitigation, Monitoring, Assessment, Restoration & Creation
- Wildlife Habitat Management Plan
- Wildlife Habitat Management Plan Development, Implementation & Monitoring

Emergency Management
- All Hazards Incident Management Team Training & Development
- Comprehensive Emergency Management Planning
- Continuity of Operations Planning
- Critical Infrastructure/Key Resources Vulnerability Assessments
- Customized EOC/ICS Training Program
- Emergency Support Function Workshops
- EOC Reorganization Technical Assistance
- Hazard Mitigation Programs
- Homeland Security Exercise & Evaluation Programs (HSEEP)
- Homeland Security Grant Program Technical Assistance & Management
- Multi-year Training & Exercise Plans
- Post-Disaster Response Teams

Environmental Services
- Air Quality Management
- Assessment & Remediation
- Brownfields Services
- Compliance Monitoring
- Due Diligence
- Environmental Auditing
- Groundwater Science
- Geologic Hazards
- Hazardous Waste
- Health & Safety
- Hydrogeologic Analysis
- Industrial Hygiene
- Pollution Prevention
- Solid Waste Management
- UST Closure

Forensic Engineering & Science
- Asbestos Consulting
- Expert Witness Service
- Indoor Air Quality/Mold Assessment
- Lead Based Paint Assessment
- Material Failure Analysis
- Moisture Intrusion Origin & Cause
- Neutral Evaluation of Sinkhole Claims
- Severe Weather Damage Investigation
- Statutory Sinkhole/Subsidence Investigation
- Structural Damage Determination

Geotechnical Engineering
- Dam, Levee & Reservoir Design, Inspection & Permitting
- Deep & Shallow Structural Foundations
- Dewatering & Disposal
- Dredged Sediment
- Earth Retaining Structures
- Erosion Protection
- Roadway Pavement Design & Evaluation
- Slope Stability & Seepage Modeling
- Soils & Materials Testing
- Subsurface Investigations

Materials Engineering
- Condition Surveys
- Construction Engineering Inspection
- Construction Materials Testing
- Construction Quality Control & Assurance
- Fabricator Special Inspections
- Footing & Foundations
- In-situ Materials Inspection
- Nondestructive Testing
- Soil & Aggregates
- Structural Steel & Wood
- Threshold Inspection

Mining
- Depressurization/ Dewatering
- Facility & Compliance Audits
- Geologic & Soil Resources
- Mine Planning
- Permitting, Compliance & Monitoring
- Process Engineering & Design
- Sediment & Environmental Characterization
- Waste Disposal Planning & Design

Survey & Mapping
- As-Built Surveys
- Boundary/ALTA Surveys
- Flood Control & FEMA Surveys
- Geodetic Control
- GIS Applications
- Hydrographic Surveys Route Surveys
- LiDAR
- Platting Condo Documents
- Route Surveys
- Site Design Surveys
- Subsurface Utility Engineering
- Topographic Survey & Mapping

Water Resources
- BMAP Services
- Coastal Engineering
- Flood Study & Floodplain Management
- GIS
- Hydrologic & Hydraulic Modeling
- Lake & Stream Restoration
- Minimum Flows & Levels
- Stream Characterization & Design
- TMDL Development
- Water Quality Modeling
- Watershed Management & Master Planning

Our clients continually provide us with challenging and rewarding projects that utilize our firm's multidisciplinary capabilities and showcase AMEC's specialized skills.

AMEC is a leading supplier of consultancy, engineering, and project management services to our customers in the world's oil and gas, minerals and metals, clean energy, and environment and infrastructure markets.

Why we are different
- Leading civil and water resource experts that develop and maintain watershed management programs and projects
- Recognized experts in the areas of TMDLs, BMAPs, hydrologic/hydraulic modeling, stormwater retrofit and design, flooding assessments and mitigation planning, NEPA consultant services, and utilities planning and design
- A "Stream Team" that is involved in cutting-edge research that will provide the blueprint for stream design and restoration in Florida
- Specialized expertise in the field of geotechnical engineering, hydrology, and hydrogeology as it relates to mining and chemical processing
- Complete understanding of surveying requirements ranging from preliminary boundary - topographic surveys to final construction staking/as built surveys
- Construction management and material testing services to county, state and federal governments for construction projects ranging from roads and bridges to buildings, stadiums, exhibit halls, and municipal facilities