G & G Builders, Inc.
Exhibit A
Build Package

El Dorado County Navigation Center

4542 Contractors Place
Livermore, CA 94551
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CA Lic. # 750759 I DIR #1000013987 I UEI # xxxxxx

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July 15, 2022
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Project: El Dorado County Navigation Center, 6880 Perks Ct., Placerville, CA 95667

Below is a summary of scope of work and pertinent information for the El Dorado County Navigation Center:

Project Documentation Available as of 07/15/22:

1. El Dorado County Navigation Center Site Plan per sheet A1.0 dated 06/22/2022
2. Architectural 50% Construction Documents dated 06/22/2022, Delta Rev. 1 dated 07/05/2022 (Appendix B)
3. Engineered Electrical, Mechanical & Plumbing Drawings dated 07/05/2022 (Appendix B)
4. Terracon Geotechnical Engineering Report dated 07/11/2022
5. Integrated Modular Solutions container drawings:
    a. (1) (N) 45'-0" Women's & Men's Restroom/Showers container dated 06/14/2022
    b. (1) (N) 20'-0" Women's ADA Restroom/Showers/Laundry container dated 06/14/2022
    c. (1) (N) 20'-0" Staff/ADA Restroom container dated 05/13/2022
    d. (1) (N) 40'-0" Staff Offices container dated 06/14/2022
6. Preliminary Civil Drawings dated 07/10/2022 (Appendix B)
7. Preliminary Structural Drawings & Calculations dated 06/21/2022 (Appendix B & C)

Phase 2 – Site Construction

00 23 00 – Office Trailers

- Provide (1) 8'x40' Jobsite Combo Container/Trailer for duration of construction
    - Includes on-site storage
    - Includes on-site office

00 31 46 – Building Permit Fees (Allowance)

- Includes $50K allowance for plan check/permit fees. If the total fee amount exceeds $50K, there will be a change order submitted for review/approval to be taken against the contingency.

01 00 00 – General Requirements/Conditions

- Includes the following:
    - On-site Supervision
    - Equipment Rental as required
    - Project Management & Administration as required
    - Progressive & Final Clean-up
    - Travel/Lodging/Per Diem
    - Dumpsters
    - Electrical Generator & Fuel
        - Provide electrical generator equipment and fuel as required to power site throughout during duration of construction

01 45 35 – Special Inspections

- Includes $30k allowance for Special Inspections as required

02 20 00 – Fire Access Road, Staff/Visitor Parking, Community Area & Bicycle Parking

- Provide (N) Fire Access Road (on-site) & Staff/Visitor Parking
  - (N) Fire Access Road on-site to be 20'-0" in width
  - Includes 13,500SF of 8" AB with 3" of Asphalt paving
  - Includes (N) Parking lot striping for (11) (N) standard parking stalls and (1) (N) ADA parking stall
- Provide (N) compacted base rock for (N) Community Area, Dog Kennels & Storage Containers
  - Includes grade/prep as required for (N) base rock
  - Place/Compact 6" of recycled class II aggregate base rock
  - Approx. 3,400 SF of area
- Provide (N) compacted base rock for (N) Bicycle Parking Area
  - Includes grade/prep as required for (N) base rock
  - Place/Compact 6" of recycled class II aggregate base rock
  - Approx. 500 SF of area
  - Reference **Alternate-Add 'A1'** to place/compact 4" of hot mix asphalt over compacted base rock
- Reference **Alternate-Add 'A5'** to widen (E) road at Perks Court from 20'-0" to 26'-0" to meet Diamond Springs Fire Department requirements
  - Assumes approx. 800LF of road to be widen
  - Includes allowance for grading/retaining wall if required where the bike lane and road elevation changes.
  - Note, this is a ROM/Allowance cost until additional information/survey data is available to determine entire scope of work.

03 00 00 – Concrete

- Provide (N) concrete slab for the 60'x75' Sprung Structure, (1) (N) 20'-0" Office/ADA Restroom container, (1) (N) 20'-0" Women's ADA Restroom/Shower/Laundry container, (1) (N) 45'-0" Staff Offices container, & (1) (N) 45'-0" Women's & Men's Restroom/Shower container
  - Includes grading and 4" thick of compacted Class II base rock subbase
  - Includes approx. 6,000SF 4" concrete slab on grade with thickened edge
    - Includes 6 MIL vapor barrier
    - Form edges and set wire mesh
    - Install (2) rows of #5 rebar at top and bottom in thickened edge
    - Pour and finish 4" concrete slab and a thickened edge of 1-3" wide x 1'-6" deep
- Provide (N) concrete walkway from (N) Welcome Center, along Staff Parking, along covered Community Area to eastside Sprung entrance
  - Includes grading and 4" thick of compacted Class II base rock subbase
  - Concrete walkway to be 4" thick x 4'-0" wide
  - Includes approx. 1,500 SF of walkway throughout site
- Provide (N) concrete pad for (N) Propane Tank
  - Includes grading and 4" thick of compacted Class II base rock subbase
  - Concrete pad to be 6'-0" x 14'-0" x 6" thick
- Provide (4) (N) 4'-0" x 6-0" concrete pads for (N) floor mounted HVAC units
  - Includes grade/prep as required for base rock subbase

04 22 00 – Trash Enclosure

- Furnish/Install (N) CMU block walls at (3) sides using plain gray masonry units
  - Trash enclosure to be 12'-0" x 10'-0" x 8'-0"
  - Standard reinforcing and fill cells with solid concrete slurry
  - Grout all joints
  - Excludes top cap if required

- Provide (N) concrete footings, slab, and curb for Trash Enclosure
    - Following base rock compaction, form for continuous footing, slab with apron and concrete curb at (N) CMU trash enclosure.
        - 12'-0" x 10'-0" x 5'-0" Apron
        - Concrete slab to be 6" thick
- Furnish/Install (2) (N) 6'-0" wide chain link swing gates at Trash Enclosure

10 14 00 – ADA/Site Signage

- Furnish/Install ADA/Site signage throughout site as required

12 93 00 – Site Furnishings

- Furnish/Install (12) (N) 96" wide x 24" deep x 72" tall storage shelving within the (2) (N) 20'-0" & (1) (N) 40'-0" storage containers
    - Qualified as U-Line H-1528 storage shelving
- Furnish/Install (4) (N) 36" wide x 24" deep x 72" tall storage shelving within the (2) (N) 20'-0" & (1) (N) 40'-0" storage containers
- Furnish/Install (4) (N) 110" wide x 21" deep x 31" tall 9-capacity bicycle racks (36 capacity total)
    - Qualified as U-Line H-2891BL single-side bicycle racks
    - Includes anchored into (N) compacted base rock with stakes
- Furnish/Install (16) (N) 46" diameter Metal Picnic Tables within (N) Community Area
    - Qualified as U-Line H-9538BLU, Blue 46" round picnic tables
    - Includes anchoring to (N) compacted base rock subbase
- Furnish/Install (16) (N) Picnic Table Umbrellas
    - Allowance cost included $350/ea. umbrella

13 12 00 – Sprung Structure

- Furnish/Install (1) (N) 60'x75' Sprung Structure
    - Includes 8.25% Placerville sales tax
        - If proof of tax exemption is provided by the County of El Dorado, this cost will not be applicable.
    - Includes Delivery/Freight
    - Includes Sprung Technical Consultant
    - Includes labor to erect Sprung Structure
    - Includes scissor lift rental equipment, boom truck/crane for erection

13 42 00 – Modular Restrooms & Storage Container

- Furnish/Install the following Integrated Modular Solutions containers to be connected to 60'x75' Sprung Structure:
    - (1) (N) 20'-0" Office/ADA Restroom container
    - (1) (N) 20'-0" Women's ADA Restroom/Shower/Laundry container
    - (1) (N) 45'-0" Staff Offices container
    - (1) (N) 45'-0" Women's & Men's Restroom/Shower container
        - Includes labor for hoisting/rigging to set modular restroom containers
        - Includes concrete set steel embed plates and field welding of containers to embed plates
- Furnish/Install (1) (N) 8'x40' & (2) (N) 8'x20' storage containers
    - Containers to be used/refurbished
    - Containers to be set on concrete pad and connected to the Sprung Structure flat end
    - Includes labor for hoisting/rigging to set container
- Includes boom truck crane to off-load and set containers

  - Includes (2) mobilizations, portal to portal
- Includes 8.25% Placerville sales tax
  - If proof of tax exemption is provided by the County of El Dorado, this cost will not be applicable.

21 10 00 – Fire Sprinklers

- Furnish/Install design-build fire sprinklers for (N) 60'x75' Sprung Structure
  - Includes Engineered Fire Sprinkler drawings
  - Includes filling applicable for Building/Fire Department submission/review
  - Fire Sprinkler riser proposed to be located on interior of Sprung in one of the building corners due weather concerns.
  - Excludes permit/inspection fees if applicable, to be paid by El Dorado County
  - Excludes fire sprinklers at (2) Modular Restrooms and (1) storage container if required.

22 00 00 – Plumbing

- Includes (N) exterior water connections with shut off valves and (N) sanitary sewer connections at (4) (N) Modular Restroom containers
  - Includes trenching/underground plumbing to edge of property for both water and sanitary sewer
- Furnish/Install (1) (N) 1,500-gallon septic tank as required for sanitary sewer
  - Excludes maintenance/disposal of waste
  - Includes (N) 320'-0" of chambers for septic system
- Excludes 1,000-gallon propane tank & propane gas, to be provided by El Dorado County during the construction phase
  - Excludes re-fills of propane gas
  - Includes underground piping from propane tank to gas-fueled equipment
- Reference **Alternate-Add 'A2'** for Trash Enclosure plumbing if required
- Reference **Alternate-Add 'A3'** for (N) domestic water booster pump if required
- Reference **Alternate-Add 'A4'** for (N) drinking foundation within Sprung Structure if required

23 00 00 – HVAC

- Furnish/Install (4) (N) ground mounted packaged heat pump/AC unit with economizers, drains and programable thermostats located on the exterior of the Sprung Structure
  - Includes ducts from AC units into Sprung to be fabricated with acoustic lining and suitable for outdoor application and to limit sound transmission from the AC fan into the Structure
- Includes testing, adjusting, and balancing (TAB) with certified report
- Includes condensate drain piping from (N) HVAC packaged units to drywell
- Includes start-up/test of (N) HVAC packaged units
- Note, Leadtime for HVAC packaged units is approx. 12+ weeks, could potentially increase depending on when the equipment is ordered.

26 00 00 – Electrical

- Furnish/Install (N) 400A single-phase electrical backboard in lieu of electrical switchgear due to lead times
  - Includes (N) underground electrical secondary wiring to each (N) electrical sub-panel
- Reference section '33 70 00 – Electrical Utilities (PG&E)' for (N) primary feeders/service to the site.
- Includes electrical connections for the following:
  - (4) (N) IMS modular containers
  - (4) (N) HVAC packaged HVAC units
- Furnish/Install (N) exterior lighting as required per electrical drawings

28 31 00 – Design Build Fire Alarm System

- Includes (N) Turnkey Design Build code compliant Fire Alarm system within (1) (N) Sprung and (4) (N) IMS Modular Containers as required
    - Includes Engineered Fire Alarm drawings
    - Excludes permit/inspection fees for fire alarm scope of work
- Includes (3) (N) Knox box for fire department access
    - Provide (1) (N) Knox box at each vehicular gate

31 23 00 – Excavation and Fill

- Excavate, grade, prep site as required for the (N) Sprung Structure, (4) (N) Modular Restroom containers, (N) Parking area, and (N) Community area
- Includes site grub to strip site area free of vegetation in preparation for new work.
    - Includes off-haul vegetation
    - Excludes removal of any dirt, to be left and spread onsite
- Provide grading and leveling of site and compact with (N) base material as required
    - Includes approx. 1,500 cubic yards to balance site as needed
    - All fill compacted to 90%
- Excludes over excavation of site if required until further information/finalized Engineered Civil drawings are available.

32 12 16 – Asphalt Paving

- Provide (N) asphalt paving of Perks Court to patch back after (N) 8” waterline has been installed
    - Includes approx. 600’-0” x 10’-0” of paving

32 31 00 – Fences and Gates

- Furnish/Install approx. 1,015LF of (N) chain link perimeter fencing and Bicycle Parking
    - Qualified as 6’-0” tall black Slatmaster 95% fence with top rail and bottom tension wire
- Furnish/Install (3) (N) pair of manual double-swing vehicular gates
- Furnish/Install (6) (N) single-swing pedestrian gates
- Furnish/Install (8) (N) 4’x8’ x 6’-0” tall dog kennels
    - Each (N) Kennel includes a standard chain link swing gate with fork latch
    - Roof qualified with 2” beams, 1” angle purlins with corrugated metal roof

32 39 13 – Metal Bollards

- Furnish/Install (14) (N) pipe bollards at all (4) sides at 3’-0” O.C. of (N) Propane Tank
    - Includes concrete filled pipe bollards
    - 4’-0” A.F.F. and 4’-0” embedded

33 00 00 – Underground Utilities

- Provide (N) underground 8” waterline from the corner of Perks Court/Missouri Flats to the proposed site (approx. 600’-0”).
    - Includes patching trench on Perks Court with (N) AC paving (Reference section 32 12 16)
    - Includes tap into (E) 12” waterline
    - Includes (1) (N) Fire hydrant
    - Includes 8” backflow piping w/F.D.C.
    - Includes all testing as required
- Includes on-site trenching/utilities for the following:
    - (N) underground electrical conduits
        - (N) electrical wiring to be completed by Electrical Subcontractor
    - (N) underground septic lines to (N) Septic tank

- (N) underground propane gas lines to each (N) HVAC packaged unit
- (N) underground domestic waterlines to (N) IMS Restroom containers
- (N) underground fire waterline for (N) Wet Fire Sprinkler system
- (N) 4" conduit with pull wire for future telephone/data lines from Perks Court to (N) Staff Office containers

- Note, per underground subcontractor, some material required has an 8-to-12-week lead time after returned/approved submittals have been received.

33 10 00 – Water Utilities – El Dorado Irrigation District (EID)

- Includes Allowances for EID Plan Review and Field Inspection fees as required
  - Note, these are budgetary numbers provided directly from EID
- Includes EID costs/fees for 1.5" meter size (3 EDU) based on EID Facility Capacity Charges (FCCs) and Fees dated 01/01/2022
  - Fees include the following:
    - Buy-in for Treatment/Transmission/Storage
    - (N) Water Supply Projects
    - Future Capital Projects
    - Gabbro Soils
    - Line & Cover 3
- Includes EID costs/fees for the 8" Private Fire Service (PFS) meter based on EID Facility Capacity Charges (FCCs) and Fees dated 01/01/2022
- Excludes meter hardware costs as those are unknown currently.

33 70 00 – Electrical Utilities (PG&E)

- Includes Allowances for (N) PG&E electrical service with Engineering
  - Provide (N) overhead 400A single-phase electrical service to proposed site
  - Includes (N) pole mounted transformer
  - Includes approx. 2-3 (N) power poles as required
  - Approx. competition for (N) electrical service from PG&E is December 2022 / January 2023.
    - Lead time can potentially be pushed out depending on how quickly we direct PG&E to proceed.

General Project Inclusions:

1. Includes Prevailing Wage
2. Includes Payment/Performance Bonds
3. Includes Insurance
4. Includes 5% Contingency
    a. *Note, Contractor must obtain written approval, at a minimum, e-mail authorization of additional fixed-price change order work before proceeding with any additional work and/or any variations in specified materials. Any remaining contingency will be returned as a deductive change order to the contract.*

General Project Exclusions:

1. Landscaping and/or irrigation if required
2. Excludes FF&E (Furniture, fixtures, and equipment) within Sprung Structure as required
    - Exclusions include but not limited to the following: beds, tables, chairs, staff furniture, etc.

Alternate-Add Options:

1. **'A1'** – Place/Compact 4" of hot mix asphalt over compacted base rock at (N) Bicycle Parking Area = **$3,400.00**
2. **'A2'** – Provide (N) water line, (N) water heater, (N) hose bib, (N) floor drain and (N) waste/vent piping at (N) Trash enclosure if required = **$54,800.00**
3. **'A3'** – Furnish/Install (N) Booster Pump for domestic water if required = **$23,600.00**
4. **'A4'** – Furnish/Install (N) drinking fountain at (N) Sprung Structure if required = **$11,100.00**
5. **'A5'** – Allowance to widen the (E) road at Perks Court from 20'-0" to 26'-0" to meet Diamond Springs Fire Department requirements = **$150,000 (ROM/ALLOWANCE)**
    a. Note, as stated above, this is a ROM/Allowance cost only until additional information/survey data is available to determine scope of work in its entirety.

As always, please feel free to contact me with any questions.

Sincerely,

Tom Stavropoulos
Project Manager
(510) 882-3478

G&G Builders

G&G Builders, Inc.
Powered by RedTeam

NEGOTIATED PRICING
Including Item Details

3510003 - El Dorado County Navigation Center (Phase 2 - Construction)

Manager: *Tom Stavropoulos*

As of 7/15/2022

Original Scope

	Description	Quantity	U/M	Labor ($)	Material ($)	Subcontract ($)	Equipment ($)	Other ($)	Total ($)
00230	Office Trailers	1.00	l/s	0.00	0.00	3,000.00	0.00	0.00	3,000.00
	8'x40' Combo Container (Storage & Office)	1.00	l/s	Subcontract @	3,000.00	=			3,000.00
02200	Parking, Access Road & Community Area (Compacted Base Rock)	1.00	l/s	0.00	0.00	63,344.00	0.00	0.00	63,344.00
	Covered Community Area/Kennels/Storage Containers	3,400.00	sf	Subcontract @	4.96	=			16,864.00
	Includes the following: *- Grade/Prep for (N) base rock* *- Place/Compact 6" of recycled class II aggregate base rock*								
	Bicycle Parking Area	500.00	sf	Subcontract @	4.96	=			2,480.00
	Includes the following: *- Grade/Prep for (N) base rock* *- Place/Compact 6" of recycled class II aggregate base rock* *- Reference Alternate-Add #A3 to place/compact 4" of hot mix asphalt over compacted base rock*								
	Fire Access Road(on-site)/Parking/Stripping	1.00	l/s	Subcontract @	44,000.00	=			44,000.00
	Includes approx. 13,500SF of 8" AB w/3" Asphalt for Fire Access Road, Staff/Visitor Parking and Stripping								
003146	Building Permit Fees (Allowance)	1.00	l/s	0.00	0.00	50,000.00	0.00	0.00	50,000.00
	Building Permit Fees (Allowance)	1.00	l/s	Subcontract @	50,000.00	=			50,000.00
010000	General Requirements	1.00	l/s	156,000.00	0.00	5,000.00	22,500.00	70,000.00	253,500.00
	On-Site Supervision	20.00	wks	Labor @	3,000.00	=			60,000.00
	Equipment Rental 10K Reach Lift	1.00	l/s	Equipment @	15,000.00	=			15,000.00
	Dumpsters	1.00	l/s	Subcontract @	5,000.00	=			5,000.00
	Project Management & Administration	20.00	wks	Labor @	1,600.00	=			32,000.00
	Clean-up & Misc. Labor	20.00	wks	Labor @	2,000.00	=			40,000.00
	Travel/Lodging	1.00	l/s	Other @	70,000.00	=			70,000.00
	Per Diem	20.00	wks	Labor @	1,200.00	=			24,000.00
	Electric Generator & Fuel	1.00	l/s	Equipment @	7,500.00	=			7,500.00
	Provide electrical generator equipment and fuel as required to power site throughout the duration of construction								
13120	Sprung Structure	1.00	l/s	71,400.00	307,422.00	10,993.00	10,000.00	24,707.27	424,522.27
	60'x75' Sprung Structure (Material)	1.00	l/s	Material @	307,422.00	=			307,422.00
	Includes Delivery/Freight								
	Sprung Technical Consultant	1.00	l/s	Subcontract @	8,193.00	=			8,193.00
	Sprung Structure Erection Labor	952.00	hrs	Labor @	75.00	=			71,400.00
	Includes both Iron Workers & Laborers classifications								
	Boom Truck	8.00	hrs	Subcontract @	350.00	=			2,800.00
	Equipment Rental	1.00	l/s	Equipment @	10,000.00	=			10,000.00

	8.25% Placerville Sales Tax	1.00	l/s	Other @	24,707.27	=				24,707.27
	If proof of tax exemption letter is provided, this cost will not be applicable.									
014535	Special Inspections (Allowance)	1.00	l/s	0.00	0.00		30,000.00	0.00	0.00	30,000.00
	Special Inspections (Allowance)	1.00	l/s	Subcontract @	30,000.00	=				30,000.00
022100	Surveys	1.00	l/s	0.00	0.00		15,000.00	0.00	0.00	15,000.00
	Surveys/Staking (Allowance)	1.00	l/s	Subcontract @	15,000.00	=				15,000.00
030000	Concrete	1.00	l/s	0.00	0.00		163,988.80	0.00	0.00	163,988.80
	Structural Concrete Slab for Sprung & (4) Modular Restrooms	1.00	l/s	Subcontract @	65,655.00	=				65,655.00
	Concrete Walkway	1,500.00	sf	Subcontract @	18.58	=				27,870.00
	Includes the following: *- Place/Compact 4" of recycled class II aggregate base rock* *- Form/Set reinforcing steel at 18" O.C.* *- Assumes walkways to be 4'-0" wide at 4" thick*									
	Grading and Baserock for Sprung and Modular Containers Concrete Pad	5,485.00	sf	Subcontract @	4.68	=				25,669.80
	(N) Concrete Pad for Propane Tank	1.00	l/s	Subcontract @	2,544.00	=				2,544.00
	(N) Concrete pad qualified as 6'-0" x 14'-0" x 6" thick									
	(N) Concrete Pads for HVAC Units	1.00	l/s	Subcontract @	3,250.00	=				3,250.00
	Includes (4) (N) 4'-0" x 6'-0" x 4" thick concrete pads									
	Furnish/Install (N) Helical Piles for Sprung Foundation	26.00	ea	Subcontract @	1,500.00	=				39,000.00
042200	Trash Enclosure	1.00	l/s	0.00	0.00		24,211.00	0.00	0.00	24,211.00
	CMU Block Trash Enclosure	1.00	l/s	Subcontract @	10,676.00	=				10,676.00
	Includes the following: *- Furnish/Install (N) CMU block walls at (3) sides using plain gray masonry units* *- Trash Enclosure to be 12'-0" x 10'-0" x 8'-0"* *- Standard reinforcing and fill cells with solid concrete slurry.* *- Grout all joints* *- Excludes top cap if required*									
	Trash Enclosure Footing/Slab/Curb	1.00	l/s	Subcontract @	9,193.00	=				9,193.00
	Following base rock and compaction, form for continuous footing, slab with apron and concrete curb at (N) CMU trash enclosure. 12'-0"x10'-0"x5'-0" Apron. Concrete slab to be 6" in depth.									
	Chain link Swing Gates	1.00	l/s	Subcontract @	4,342.00	=				4,342.00
	Furnish/Install (2) (N) 6'-0" wide chain link swing gates at Trash Enclosure									
101400	ADA/Site Signage	1.00	l/s	0.00	0.00		10,000.00	0.00	0.00	10,000.00
	ADA/Site Signage throughout site as required	1.00	l/s	Subcontract @	10,000.00	=				10,000.00
129300	Site Furnishings	1.00	l/s	9,600.00	29,512.00		0.00	0.00	0.00	39,112.00
	(N) Bicycle Racks	4.00	ea	Material @	525.00	=				2,100.00
	Includes the following: *- (4) (N) 110"x21"x31" (9-capacity Bikes per bike rack) (36-capacity total)* *- Qualified as U-Line H-2891BL single-sided bike racks* *- Anchored into (E) compacted base rocks with stakes*									
	Installation Labor - Bicyle Racks	16.00	hrs	Labor @	75.00	=				1,200.00
	(N) 96" wide x24" deep x 72" height Shelving	12.00	ea	Material @	287.00	=				3,444.00
	Qualified as U-Line H-1528 Storage Racks *Shelving to be installed within (3) storage containers at Community Area*									
	(N) 36" wide x48" deep x 72" height Shelving	4.00	ea	Material @	192.00	=				768.00
	Qualified as U-Line H-1888 Storage Racks *Shelving to be installed within (3) storage containers at Community Area*									
	Installation Labor - Storage Shelving	64.00	hrs	Labor @	75.00	=				4,800.00

	(N) 46" dia. Round Metal Picnic Tables	16.00	ea	Material @	1,100.00	=				17,600.00
	Qualified as U-Line H-9538BLU 46" round metal picnic tables									
	Installation Labor - Assemble/Set Picnic Tables	48.00	hrs	Labor @	75.00	=				3,600.00
	Picnic Table Umbrellas (Allowance)	16.00	ea	Material @	350.00	=				5,600.00
134200	Modular Restrooms/Containers	1.00	l/s	6,600.00	379,517.08	15,600.00	0.00	30,237.66		431,954.74
	Furnish (2) 20'-0" Storage Containers	2.00	ea	Material @	8,000.00	=				16,000.00
	Storage containers qualified to be used/refurbished and set on 6" of compacted base rock.									
	Furnish (1) 40'-0" Storage Containers	1.00	ea	Material @	9,400.00	=				9,400.00
	Excludes sales tax with proof of tax exemption letter from El Dorado County.									
	Furnish (1) 8'x20' Women's Restroom, Shower & Laundry	1.00	ea	Material @	75,110.41	=				75,110.41
	If proof of tax exemption letter is provided, this cost will not be applicable.									
	Furnish (1) 8'x20' Staff Office/Restroom	1.00	ea	Material @	62,317.91	=				62,317.91
	If proof of tax exemption letter is provided, this cost will not be applicable.									
	Furnish (1) 8'x40' Staff Offices	1.00	ea	Material @	78,180.75	=				78,180.75
	If proof of tax exemption letter is provided, this cost will not be applicable.									
	Furnish (1) 8'x45' Men's & Women's Shower Restroom Container	1.00	ea	Material @	133,508.01	=				133,508.01
	Steel Embed Plates	1.00	l/s	Material @	5,000.00	=				5,000.00
	Field Welding	40.00	hrs	Subcontract @	150.00	=				6,000.00
	Field welding of storage containers to steel plates (concrete embedded)									
	Crane	24.00	hrs	Subcontract @	400.00	=				9,600.00
	Includes (2) mobilizations, portal to portal									
	Labor for Hoisting/Rigging/Set (3) Storage Containers	24.00	hrs	Labor @	75.00	=				1,800.00
	Labor for Hoisting/Rigging/Set (4) (N) Modular Restrooms & Showers	64.00	hrs	Labor @	75.00	=				4,800.00
	8.25% Placerville Sales Tax for IMS Containers	1.00	l/s	Other @	28,802.16	=				28,802.16
	8.25% Placerville Sales Tax for Storage Containers	1.00	l/s	Other @	1,435.50	=				1,435.50
210000	Design-Build Fire Sprinklers	1.00	l/s	0.00	0.00	45,625.00	0.00	0.00		45,625.00
	Sprung Structure Fire Sprinkler System	1.00	l/s	Subcontract @	45,625.00	=				45,625.00
220000	Plumbing	1.00	l/s	0.00	0.00	150,882.00	0.00	0.00		150,882.00
	Plumbing	1.00	l/s	Subcontract @	92,052.00	=				92,052.00
	Includes the following: *- Single point water and sanitary sewer connections to (N) IMS containers* *- Chlorinate/Disinfect (N) domestic water piping* *- Includes (N) propane gas lines from propane tank to (4) (N) packaged HVAC units & (N) water heaters at IMS containers*									
	(N) Septic Tank w/320' of chambers	1.00	l/s	Subcontract @	39,600.00	=				39,600.00
	Excludes Propane Tank for Gas-Fueled Equipment	1.00	l/s	Subcontract @	0.00	=				0.00
	Proposed 1,000 gallon propane tank and propane to be furnished/installed by El Dorado County.									

	(N) Piping from Propane Tank to Gas-Fueled Equipment	1.00	l/s	Subcontract	@	19,230.00	=				19,230.00
	Trash Enclosure Plumbing (Alt. Add 'A2')	1.00	l/s	Subcontract	@	0.00	=				0.00
	Reference Alternate-Add 'A2' if the following is required: *Water line, water heater, hose bib, floor drain & waste/vent piping*										
	Domestic Water Booster Pump (Alt. Add 'A3')	1.00	l/s	Subcontract	@	0.00	=				0.00
	Reference Alternate-Add 'A3' if a (N) Booster Pump is required for the domestic water										
	(N) Drinking Fountain in Sprung (Alt. Add 'A4')	1.00	l/s	Subcontract	@	0.00	=				0.00
	Reference Alternate-Add 'A4' if a (N) Drinking foundation is required within Sprung Structure Dormitory										
230000	HVAC	1.00	l/s	0.00		0.00		157,378.00	0.00	0.00	157,378.00
	HVAC System for Sprung	1.00	l/s	Subcontract	@	157,378.00	=				157,378.00
	Includes the following: *- Duct from packaged HVAC units into the Sprung Structure to be fabricated with acoustic lining and suitable for outdoor application and limit sound transmission from fan into the structure* *- Controls wiring and thermostats for HVAC units* *- Start/Test HVAC units* *- Condensate drain piping off of HVAC units to drywell* *- TAB with Certified Report*										
260000	Electrical	1.00	l/s	0.00		0.00		132,848.00	0.00	0.00	132,848.00
	Electrical	1.00	l/s	Subcontract	@	132,848.00	=				132,848.00
283100	Design-Build Fire Alarm System	1.00	l/s	150.00		2,250.00		42,500.00	0.00	0.00	44,900.00
	60'x75' Sprung Structure & IMS Modular Containers	1.00	l/s	Subcontract	@	42,500.00	=				42,500.00
	(3) (N) Knox Box for Fire Department Access	3.00	ea	Material	@	750.00	=				2,250.00
	Provide (1) (N) Knox Box for each vehicular gate (3 Total)										
	Labor to Install (3) (N) Knox Boxes	2.00	hrs	Labor	@	75.00	=				150.00
312300	Excavation and Fill	1.00	l/s	0.00		0.00		122,806.00	0.00	0.00	122,806.00
	Site Grub	1.00	l/s	Subcontract	@	38,180.00	=				38,180.00
	Includes strip site area free of vegetation in preparation for site construction. Includes off-haul of vegetation and any dirt/spoils to be left on-site.										
	Site Grading & Baserock	1.00	l/s	Subcontract	@	84,626.00	=				84,626.00
	Includes providing grading and leveling of site, compact roughly 36,000 sq. ft. of (N) base material. Assumes up to 6" of (N) base rock to bring site to level elevation.										
321216	Asphalt Paving	1.00	l/s	0.00		0.00		29,700.00	0.00	0.00	29,700.00
	Asphalt Paving	1.00	l/s	Subcontract	@	29,700.00	=				29,700.00
	Includes the following: *- Paving of Perks Court off-site (600'x10'-0") to patch back after (N) 8" waterline has been installed*										
323100	Fences and Gates	1.00	l/s	0.00		0.00		140,589.00	0.00	0.00	140,589.00
	Perimeter Fencing, Pedestrian, and Vehicular Gates	1.00	l/s	Subcontract	@	93,824.00	=				93,824.00
	Includes the following: *- Approx. 1,015 LF of (N) 6'-0" tall black Slatmaster 95% fence with top rail and bottom tension wire.* *- (3) (N) pairs of manual double-swing vehicular gates* *- (6) (N) single-swing pedestrian gates*										
	Animal/Dog Kennels	1.00	l/s	Subcontract	@	46,765.00	=				46,765.00
	Includes the following: *- 6'-0" tall standard galvaized chain link fence as required* *- (8) (N) 4'x8' x 6-0" tall kennels* *- Each kennel includes a standard chain link gate with fork latch* *- Roof qualified with 2" beams and 1" angle purlins with corrugated metal roof*										
323913	Metal Bollards	1.00	l/s	0.00		0.00		9,100.00	0.00	0.00	9,100.00
	(N) Concrete Filled Bollards at Propane Tank	14.00	ea	Subcontract	@	650.00	=				9,100.00
	Includes the following: *- (14) (N) pipe bollards, all (4) sides at 3'-0" O.C. for (N) Propane Tank* *- Concrete filled* *- 4'-0" embedded & 4'-0" A.F.F.*										
330000	Civil/Underground/Site Utilities	1.00	l/s	0.00		0.00		189,970.00	0.00	0.00	189,970.00

	(N) Water to site	1.00	l/s	Subcontract @	181,720.00	=				181,720.00
	Includes the following: *- 600'-0" of 8" water line to propose site* *- Includes (1) (N) Fire Hydrant* *- 100'-0" of 2" waterline* *- 8" backflow piping with F.D.C.* *- All testing included*									
	(N) Gas Line	1.00	l/s	Subcontract @	8,250.00	=				8,250.00
	Includes the following: *- Trench, sand bedding and backfill* *- Gas line and connections included under plumbing scope*									
331000	Water Utilities (EID) (Allowance)	1.00	l/s	0.00	0.00		24,000.00	0.00	100,166.00	124,166.00
	Plan Review Fees (Allowance)	1.00	l/s	Subcontract @	4,000.00	=				4,000.00
	**Budgetary numbers provided by EID*									
	Field Inspection Fees (Allowance)	1.00	l/s	Subcontract @	20,000.00	=				20,000.00
	**Budgetary numbers provided by EID*									
	1.5" Potable/Domestic Water Fees	1.00	l/s	Other @	69,876.00	=				69,876.00
	Cost based on El Dorado Irrigation District Facility Capacity Charges (FCCs) and fees. *Excludes meter hardware costs*									
	6" Private Fire Services (PFS) Fee	1.00	l/s	Other @	30,290.00	=				30,290.00
	Excludes meter hardware costs									
337000	Electrical Utilities (PG&E) (Allowance)	1.00	l/s	0.00	0.00		0.00	0.00	60,000.00	60,000.00
	PG&E Fees (Allowance)	1.00	l/s	Other @	60,000.00	=				60,000.00
	Includes the following: *- PG&E Engineering* *- (N) Overhead 400A Single-Phase Primary Feeders to the proposed site* *- (N) Pole mounted transformer* *- Approx. 2-3 (N) Power poles as required* *- Approx. completion for (N) Electrical Service from PG&E is December 2022 / January 2023*									

SUBTOTAL DIRECT COSTS	**243,750.00**	**718,701.08**	**1,436,534.80**	**32,500.00**	**285,110.93**	**2,716,596.81**
Indirect Costs	109,687.50	71,870.11	143,653.48	3,250.00	28,511.09	
Indirect Cost Allocation Rates	45.00%	10.00%	10.00%	10.00%	10.00%	
TOTAL DIRECT & INDIRECT COSTS	**353,437.50**	**790,571.19**	**1,580,188.28**	**35,750.00**	**313,622.02**	**3,073,568.99**
Fee					8.00%	292,720.86

Supplemental Markups:

01	Insurance	1.50	Percent of Total Price	54,885.16
02	Bonds	1.50	Percent of Total Price	54,885.16
04	5% Contingency	5.00	Percent of Total Price	182,950.54
	TOTAL PRICE			**3,659,010.71**

This Exhibit represents the composition of the total not-to-exceed budget for this Agreement. In the performance of the Work, Contractor may request to reallocate the expenses among the various Direct Costs and subcontractors listed herein subject to County Contract Administrator's prior written approval. In no event shall the total not-to-exceed amount of the Agreement be exceeded.

Contractor will be compensated for Direct Costs actually incurred for the Work. Direct Cost includes the cost of subcontracted work. If the Direct Cost actually incurred is less than the amount specified in the line item, a deductive change order will be issued to adjust the line item amount and the unused funds will be transferred to the contingency budget.

Bidder: G&G Builders, Inc. **Contract #: PW** _____

**Preliminary Subcontractor Listing, subject to change

SUBCONTRACTORS LISTING

The Bidder shall list the business name, address and Contractor's License Number of each subcontractor to whom the Bidder proposes to subcontract portions of the Work in accordance with the provisions of the Subletting and Subcontracting Fair Practices Act (Public Contract Code Sections 4100-4114). The Bidder shall also list the portion of the Work to be performed by each subcontractor by including a description of the Work to be performed by each subcontractor and the amount of each item subcontracted expressed as percentage of the Bidder's total bid amount. This listing shall be attached to and be a part of the Bidder's bid, quote or proposal.

Name of Subcontractor	Business Address	Contractor's License No.	Item of Work Description and Percentage of Work Subcontracted
Dryco	9390 Elder Creek Rd. Sacramento, CA 95829	540379 / A & C13 DIR#1000003241	Grading, Compacted Base Rock, Concrete, Fencing, Striping, & Trash Enclosure - Approx. 11%
Carnahan Electric	6391 Capital Ave. Diamond Springs, CA 95619	423462/C10 & C46 DIR#1000000075	Electrical - Approx. 4%
AlertONE Services, Inc.	4602 N. Quail Run Rd. Ozark, MO 65721	1019252/C7 DIR#1000062126	Fire Alarm - Approx. 1%
Three Alarm Fire Protection	527 Waxlax Way Livermore, CA 94551	884552/C16 DIR#1000026903	Fire Sprinklers - Approx. 1%
Milestone Contractors, Inc. DBA: N.V. Heathorn, Co.	1980 Olivera Rd. Ste. C Concord, CA 94520	761659/A/B/C36 DIR #1000000195	Plumbing - Approx. 2%
Milestone Contractors, Inc. DBA: N.V. Heathorn, Co.	1980 Olivera Rd. Ste. C Concord, CA 94520	761659/A/B/C36 DIR #1000000195	HVAC/Mechanical - Approx. 5%
Joe Vicini, Inc.	315 Placerville Dr. Placerville, CA 95667	213766/A DIR#1000008226	Civil/Underground Utilities - Approx. 12%

SECTION 2.1

Geotechnical Engineering Report

Perks Court Facility
Placerville, California
July 11, 2022
Terracon Project No. NB225050

Prepared for:
G&G Builders Inc.
Livermore, California

Prepared by:
Terracon Consultants, Inc.
Sacramento, California

July 11, 2022

G&G Builders Inc.
408 Baslow Court
Livermore, California 95661

Attn: Mr. Tom Stravropoulos

Re: Geotechnical Engineering Report
Perks Court Facility
6880 Perks Court
Placerville, California
Terracon Project No. NB225050

Dear Mr. Tom Stravropoulos:

We have completed the Geotechnical Engineering services for the above referenced project. This study was performed in general accordance with Terracon Proposal No. PNB225050 dated May 10, 2022. This report presents the findings of the subsurface exploration and provides geotechnical recommendations concerning earthwork and the design and construction of foundations and floor slabs for the proposed project.

We appreciate the opportunity to be of service to you on this project. If you have any questions concerning this report or if we may be of further service, please contact us.

Sincerely,
Terracon Consultants, Inc.

Eric S. Smith
Professional Engineer 82116
Senior Engineer

Garret S.H. Hubbart, Senior Principal
Geotechnical Engineer 2588
Regional Manager

REPORT TOPICS

Note: This report was originally delivered in a web-based format. For more interactive features, please view your project online at client.terracon.com.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES
SITE LOCATION AND EXPLORATION PLANS
EXPLORATION RESULTS
SUPPORTING INFORMATION

Note: Refer to each individual Attachment for a listing of contents.

Geotechnical Engineering Report

Perks Court Facility
6880 Perks Court
Placerville, California

Terracon Project No. NB225050
July 11, 2022

INTRODUCTION

This report presents the results of our subsurface exploration and geotechnical engineering services performed for the proposed Perks Court Facility to be located at 6880 Perks Court in Placerville, California. The purpose of these services is to provide information and geotechnical engineering recommendations relative to:

- Subsurface soil conditions
- Groundwater conditions
- Site preparation and earthwork
- Excavation considerations
- Seismic Site Classification per 2019 CBC
- Foundation design and construction
- Percolation testing
- Pavements
- Soil Corrosivity

The geotechnical engineering Scope of Services for this project included the advancement of five (5) test borings to depths ranging from 6 ½ to 26 ½ feet below existing site grades, four (4) test pits to depths ranging from 11.0 to 13 feet below the surface and five (5) percolation test to 5 feet below the surface.

Maps showing the site and boring locations are shown in the **Site Location** and **Exploration Plan** sections, respectively. The results of the laboratory testing performed on soil samples obtained from the site during the field exploration are included on the boring logs and as separate graphs in the **Exploration Results** section.

SITE CONDITIONS

The following description of site conditions is derived from our site visit in association with the field exploration and our review of publicly available geologic and topographic maps.

Item	Description
Parcel Information	■ The project is located at 6880 Perks Court in Placerville, California. ■ Assessor Parcel Number (APN): 327-1300-020-0000 ■ The site is approximately 15.3-acres in area. ■ Latitude and Longitude (approximate): 38.7111° N, 120.8375 W ■ See **Site Location**
Existing Improvements	The site is an undeveloped vacant lot. It contains a non-engineered roundabout driveway with gravel deposited on it.
Current Ground Cover	The surface of the site contains a loosely deposited gravel driveway, surrounded by native field grass, weeds and brush, along with an assortment of young and mature trees.
Existing Topography	The front southwest corner of the lot facing Perks Ct. road, is a relatively level platform area. As the flat surface continues toward the north, northeast and east, the area contains a downward sloping ledge, descending approximately 15 to 20 vertical feet at a 2:1 (H:V) slope. The site continues to descend and joins with a naturally formed drainage ravine.
Geology	The geologic materials underlying the site as shown on geology mapping, consists of Mesozoic aged, Granitic rock deposits (Mzg) according to USGS maps[1]. The subsurface materials encountered during our field exploration consisting of sand, gravel and rock and are generally consistent with the mapped geology.

1. Wagner, D.L., Jennings, C.W., Bedrossian, T.L. and Bortugno, E.J., 1981, "*Geologic Map of the Sacramento Quadrangle, California 1:250,000"* California Division of Mines and Geology.

PROJECT DESCRIPTION

Our initial understanding of the project was provided in our proposal and was discussed during project planning. A period of collaboration has transpired since the project was initiated, and our final understanding of the project conditions is as follows:

Item	Description
Information Provided	■ Concept Site Plan _ Eldorado Navigation Center, Prepared by RMP Team, dated 5/16/2022
Project Description	The project will consist of the constructing a day and dorm meeting center building with restrooms and showers as well as a covered community area containing outdoor tables and a kennel and pet facility area. Additionally, a staff parking area and bicycle parking area is planned.

Item	Description
Proposed Structure	The meeting center building is expected to be a lightly loaded modular structure, approximately 4,500 square feet. Shipping containers converted to bath and showers will be placed adjacent to the modular structures. The covered community area is expected to be an open canopy structure with smaller storage structures for pet facilities.
Building Construction	The modular building is expected to be a single-story prefabricated modular structure and the shipping containers are fully manufactured and constructed. The structure and containers are expected to be supported on a mat-slab on grade foundation. The open canopy is expected to be a post support structure.
Finished Floor Elevation	Within ± 1 foot of existing grades.
Maximum Loads	■ Columns: 25 kips ■ Walls: 1 to 2 kips per linear foot (klf) ■ Slabs: not anticipated
Grading/Slopes	We anticipate up to ± 2 ft. of cuts/fills to construct a level surface. In addition, we anticipate over-excavating up to 15 feet of the existing side slope to remove undocumented fill and reconstruct the slope with engineered compacted fill.
Below-Grade Structures	Non anticipated.
Free-Standing Retaining Walls	None anticipated.
Pavements	Both rigid (concrete) and flexible (asphalt) pavement sections are provided. Anticipated traffic indices (TIs) are as follows: ■ Automobile Parking Area: Traffic Index of 4.5 ■ Driving Lanes: Traffic Index of 5.5 ■ Truck Parking Areas: Traffic Index of 6.0 The pavement design period is 20 years.

GEOTECHNICAL CHARACTERIZATION

We have developed a general characterization of the subsurface conditions based upon our review of the subsurface exploration, laboratory data, geologic setting and our understanding of the project. This characterization, termed GeoModel, forms the basis of our geotechnical calculations and evaluation of site preparation and foundation options. Conditions encountered at each exploration point are indicated on the individual logs. Stratification boundaries on the boring logs represent the approximate location of changes in native soil types; in situ, the transition between materials may be gradual. The individual logs can be found in the **Exploration Results** section and the GeoModel can be found in the **Figures** section of this report.

As part of our analyses, we identified the following model layers within the subsurface profile. For a more detailed view of the model layer depths at each boring location, refer to the GeoModel.

Model Layer	Layer Name	General Description
1	Clayey Gravel with Sand	Fine to medium grained, nonplastic, pieces of slate and asphalt debris.
2	Silty Sand	Medium dense to dense, nonplastic to low plasticity, fine to medium grained.
3	Clayey Sand	Medium dense to dense, nonplastic to low plasticity, fine to medium grained.
4	Lean Clay with Sand	Very stiff to hard, low to medium plasticity, silty sand with varying amounts of cementation.
5	Poorly Graded Sand	Fine grained, trace organics and gravel
6	Mariposa Formation	Extremely strong, slightly weathered, slightly fractured, extremely close fracture spacing, laminated bedding

Groundwater

During drilling operation, boreholes were observed for the presence of groundwater and recorded standing groundwater levels upon completion. Groundwater was not encountered in our test borings while drilling, or for the short duration the borings could remain open. No nearby groundwater monitoring wells or historical groundwater information was available upon our review. Based on our borings, we don't anticipate encountered groundwater, however depending on the time of year construction takes place, some perched water conditions may occur.

Groundwater level fluctuations occur due to seasonal variations in the amount of rainfall, runoff and other factors not evident at the time the borings were performed. Therefore, groundwater levels during construction or at other times in the life of the structure may be higher or lower than anticipated. The possibility of groundwater level fluctuations should be considered when developing the design and construction plans for the project.

SEISMIC CONSIDERATIONS

The 2019 California Building Code (CBC) Seismic Design Parameters have been generated using the SEAOC/OSHPD Seismic Design Maps Tool. This web-based software application calculates seismic design parameters in accordance with ASCE 7-16 and 2019 CBC. The 2019 CBC requires that a site-specific ground motion study be performed in accordance with Section 11.4.8 of ASCE 7-16 for Site Class D sites with a mapped S_1 value greater than or equal 0.2.

However, Section 11.4.8 of ASCE 7-16 includes an exception from such analysis for specific structures on Site Class D sites. The commentary for Section 11 of ASCE 7-16 (Page 534 of Section C11 of ASCE 7-16) states that "In general, this exception effectively limits the

requirements for site-specific hazard analysis to very tall and or flexible structures at Site Class D sites." Based on our understanding of the proposed structures, it is our assumption that the exception in Section 11.4.8 applies to the proposed structures. However, the structural engineer should verify the applicability of this exception.

Based on this exception, the spectral response accelerations presented below were calculated using the site coefficients (F_a and F_v) from Tables 1613.2.3(1) and 1613.2.3(2) presented in Section 1613 of the 2019 CBC.

Seismic Design Parameters	
Description	**Values**
2019 California Building Code Site Classification (CBC) [1]	D [2, 5]
Site Latitude (°N)	38.7111° N
Site Longitude (°W)	120.8375° W
S_s Spectral Acceleration for a 0.2-Second Period [3]	0.439
S_1 Spectral Acceleration for a 1-Second Period [3]	0.208
F_a Site Coefficient for a 0.2-Second Period [4]	1.449
F_v Site Coefficient for a 1-Second Period [4]	2.184
S_{MS} – MCE Spectral Acceleration Parameter for a Short Period [4]	0.636
S_{M1} – MCE Spectral Acceleration Parameter for a 1-Second Period [4]	0.454
S_{DS} – Design Spectral Acceleration for a Short Period [4]	0.424
S_{D1} – Design Spectral Acceleration for a 1-Second Period [4]	0.303

2. Seismic site classification in general accordance with the *2019 California Building Code*.
3. The 2019 California Building Code (CBC) requires a site soil profile determination extending to a depth of 100 feet for seismic site classification. The maximum depth explored at the site was 16½ feet bgs. The site properties below the boring depth to 100 feet were estimated based on our experience and knowledge of geologic conditions of the general area. Additional deeper borings or geophysical testing may be performed to confirm the conditions below the current boring depth.
4. These values were obtained using online seismic design maps and tools provided by the SEAOC/OSHPD (https://seismicmaps.org/).
5. Calculated based on CBC tables 1613.2.3(1) and 1613.2.3(2).

If desired, a geophysical exploration could be utilized at this site to attempt to verify or improve the seismic site class. In our opinion, a geophysical exploration at this site would likely improve the seismic site class from D to C. Terracon should be contacted if a geophysical exploration is desired.

Faulting and Estimated Ground Motions

The site is not located in a seismically active area. The type and magnitude of seismic hazards affecting the site are dependent on the distance to causative faults, the intensity, and the magnitude of the seismic event. Based on the SEAOC/OSHPD Seismic Design Maps Report, using the American Society of Civil Engineers (ASCE 7-16) standard, the peak ground acceleration (PGA_M) at the project site is expected to be 0.266g. Based on the USGS 2014 interactive deaggregations, the PGA at the subject site for a 2% probability of exceedance in 50 years (return period of 2475 years) is expected to be about 0.283g. Per the USGS Unified Hazard Tool, the project site has a mean earthquake magnitude of 6.35. Furthermore, the site is not located within an Alquist-Priolo Earthquake Fault Zone based on our review of the State Fault Hazard Maps.[1]

CORROSIVITY

The table below lists the results of laboratory soluble sulfate, soluble chloride, electrical resistivity, and pH testing. The values may be used to estimate potential corrosive characteristics of the on-site soils with respect to contact with the various underground materials which will be used for project construction.

Corrosivity Test Results Summary						
Boring	**Sample Depth (feet)**	**Soil Description**	**Soluble Sulfate (%)**	**Soluble Chloride (%)**	**Electrical Resistivity (Ω-cm)**	**pH**
B-1	2.5	Silty Sand	<0.01	<0.01	6,711	7.6

These test results are provided to assist in determining the type and degree of corrosion protection that may be required for the project. We recommend that a certified corrosion engineer determine the need for corrosion protection and design appropriate protective measures.

Resistivity

The resistivity value indicates the sample tested exhibits moderate corrosive potential to buried metal pipes. Evaluation of the test results is based upon the guidelines of J.F. Palmer, “Soil Resistivity Measurements and Analysis”, Materials Performance, Volume 13, January 1974. The following table outlines the guidelines for soil resistivity for corrosion potential.

[1] California Department of Conservation Division of Mines and Geology (CDMG), *“Digital Images of Official Maps of Alquist-Priolo Earthquake Fault Zones of California, Southern Region”*, CDMG Compact Disc 2000-003, 2000.

Corrosion Potential of Soil on Steel	
Soil Resistivity (ohm-cm)	**Corrosion Potential**
0 to 1,000	Very High
1,000 to 2,000	High
2,000 to 5,000	Moderate
> 5,000	Mild

Sulfates

The sulfate test result indicates that the soil from boring B-1 classifies as Class S0 according to Table 19.3.1.1 of ACI 318-14. This indicates that the sulfate severity is negligible when considering corrosion to concrete. ACI 318-14, Section 19.3 does not provided restrictions to the type of concrete used for Sulfate Class S0. For further information, see ACI 318-14, Section 19.3.

Laboratory pH

Data suggests the soil pH should not be the dominant soil variable affecting soil corrosion if the soil has a pH in the 5 to 8 range. The pH of the sample did test within the recommended range and therefore should be considered when determining soil corrosion potential.

GEOTECHNICAL OVERVIEW

From a geotechnical point of view, the proposed improvements to the planned facility are feasible for construction on the subject site provided the recommendations presented in this reported are incorporated into the project plans and specifications.

Based on our site investigation the primary geotechnical considerations for the project is the presence of near surface undocumented fill and traces of organic material identified on the north and east back edge of the planned improvement area and the downward slope.

Undocumented Fill

Based on our site investigation an undocumented fill, loosely deposited material containing debris, organics and deleterious material was identified during test pit explorations. In Test Pit TP-1 a material containing slate and asphalt debris was identified in the upper 2 ½ feet. In TP-2 and TP-3 deposited material containing trace organic material and gravel was encountered, varying in depth from 7 to 11 feet below the surface. In TP-4, organic material was encountered 5 to 12 feet below the surface.

We recommend that all undocumented fill soils and organic material be removed. The material may be cleaned of any organics and deleterious material and stockpiled for reuse. The excavation

shall be thoroughly cleared prior to backfill placement and/or construction. We do not recommend fill soils be reused as engineered fill unless soils can be cleaned and processed to conform with the requirements outlined in **Earthwork**. Since the grading will be in an area near an existing slope, the recommendations for benching shall also be followed as outlined in **Earthwork.**

General Discussion

Geotechnical recommendations for the proposed developments can be found in the following section; **Earthwork**, **Mat Foundations**, **Shallow Foundations** and **Pavements**.

The **General Comments** section provides an understanding of the report limitations.

EARTHWORK

The following recommendations include site preparation, subgrade, excavation, preparation and placement of engineered fills on the project. The recommendations presented for design and construction of earth supported elements including foundations and pavements are contingent upon following the recommendations outlined in this section.

Earthwork on the project should be observed and evaluated by Terracon. The evaluation of earthwork should include observation and testing of engineered fill, subgrade preparation, foundation bearing soils, and other geotechnical conditions exposed during the construction of the project.

Site Preparation

Strip and remove existing vegetation, debris, and other deleterious materials from the surface in the proposed improvement and pavement areas. Exposed surfaces should be free of mounds and depressions which could prevent uniform compaction. The site should be initially graded to create a relatively level surface to receive fill and provide for a relatively uniform thickness of fill beneath proposed building structures.

Our exploration indicated in TP-1 in the upper 2.5 feet consisted of undocumented fill material containing slate and asphalt debris. In TP-2 through TP-4, undocumented fill material existed from varying depths from 5 to 12 feet below the surface. We recommend that all undocumented fill and soils with organic material within the improvement areas, should be over-excavated to competent native material prior to backfill placement and/or construction.

Subgrade Preparation

Based on our site investigation we recommend removing the undocumented fill and organic material encountered within the proposed improvement areas and side slope. Excavation of the undocumented fill should extend a minimum of 10 feet beyond improvement footprint areas. We

anticipate cuts ranging in depth from 2 ½ to 12 feet below the surface within the improvement area and portions of the side slope. The site and side slope can be brought back to final design grade with engineered compacted fill. The geotechnical engineer or representative of Terracon should be present to observe the extent of the final excavation and the exposed native surface.

Over-excavation of the undocumented fill and organics should include the complete removal of trash, debris, asphalt or concrete rubble, organics such-as vegetation, roots, bark or wood fragments. Voids or depressions created by the removal of buried objects should be cleaned of all loose soil and debris and backfilled with engineered fill, placed and compacted as described below.

Once any required cuts and over-excavation operations are complete, and prior to placing any fill, areas which will receive fill should be scarified, moisture conditioned, and compacted. The depth of scarification of subgrade soils and moisture conditioned shall be a minimum depth of 8 to 12 inches. However, the depth of scarification of subgrade soils and moisture conditioning of the subgrade is highly dependent upon the time of year of construction and the site conditions that exist immediately prior to construction. If construction occurs during the winter or spring, when the subgrade soils are typically already in a moist condition, scarification and compaction may only be 8 inches. If construction occurs during the summer or fall when the subgrade soils have been allowed to dry out deeper, the depth of scarification and moisture conditioning may be as much as 18 inches or more. A representative from Terracon should be present to observe the exposed subgrade and specify the depth of scarification and moisture conditioning required subsequent to grading cuts and prior to placing fill.

Following scarification and compaction of the subgrade, any required fill may be placed and compacted in accordance with the ***Fill Material Types*** and ***Compaction Requirements*** sections of this report.

Excavations

It is anticipated that excavation during construction operations can be accomplished with conventional earthmoving equipment. The bottom of excavations should be thoroughly cleaned of loose soils and disturbed materials prior to backfill placement and/or construction.

Soils from excavations should not be stockpiled higher than 6 feet or within 10 feet of the edge of an open trench or slope. Cuts that are proposed within five 5 feet of light standards, other utilities, underground structures, and pavement should be provided with temporary shoring.

Individual contractors are responsible for designing and constructing stable, temporary excavations. Excavations should be sloped or shored in the interest of safety following local, and federal regulations, including current OSHA excavation and trench safety standards.

It may be necessary for the contractor to retain a geotechnical engineer to monitor the soils exposed in all excavations and provide engineering services for any excavation slopes. This will provide an opportunity to monitor the soils encountered and to modify the excavation slopes as necessary. It also offers an opportunity to verify the stability of the excavation slopes during construction.

Slopes

Due to the required over excavation and required fill placement the following recommendations shall be met.

Where engineered fill is placed on slopes at inclinations greater than 5H:1V, a toe key should be constructed at the bottom of the fill. The width of the key should be at least half the height of the vertical slope above it or a minimum of 10 feet wide. This key should be excavated a minimum of 3 feet into firm, stable soil or bedrock. The keyway should be inclined back towards the slope at an inclination of about 3 percent.

During construction of the engineered fill, benches should be cut into the existing slope surface. The benches should be excavated at least 3 feet into firm, stable soil or bedrock. The benches should be a minimum of 8 feet wide and should be constructed at vertical intervals of 5 feet or less.

Since most fill slopes are constructed with a loosely or poorly compacted surface, the fill slopes should be slightly overbuilt and trimmed back to firm, compacted soil. A brow berm or drainage swale shall be provided at the top of all slopes where the contributing drainage area to the slope has a flow path longer than 30 feet in order to limit erosion and sedimentation. The brow berms and swale shall be designed by the civil engineer to accommodate the calculated runoff. Implementing these features will limit the runoff water traveling down slopes reducing the potential for erosion of the slope and sedimentation at the bottom of the slope.

Cut and fill slopes should be covered with some type of erosion control measure immediately after construction. Erosion control measures can consist of erosion resistant vegetation, jute netting, or geotextile erosion control mats. These should be installed per the manufacturer's specifications. Some minor, relatively shallow erosion should be anticipated and planned for. Routine maintenance will be required on all cut and fill slopes. Any detected problems should be repaired immediately. It is important that the bottom of all cuts and fills be protected from erosion or undercutting that could jeopardize the integrity of the slope. Substantial slope failure could occur if the bottoms of the slopes are not protected.

The surface soils at the site primarily consist of approximately 2 to 4 inches of topsoil and/or loose silty sand with gravels which can be typically subject to significant wind/water erosion or sedimentation. The project civil engineer, while developing the plans, should plan to limit

wind/water erosion and sedimentation during and after construction to a level acceptable to the owner.

Fill Material and Placement

All fill materials should be inorganic soils free of vegetation, debris, and fragments larger than six inches in size. Pea gravel or other similar non-cementitious, poorly-graded materials should not be used as fill or backfill without the prior approval of the geotechnical engineer.

Clean on-site soils or approved imported materials may be used as general engineered. Class II AB or an equivalent must be used for granular engineered fill.

If imported soils are used as fill materials to raise grades, these soils should conform to low volume change materials and should conform to the following requirements:

Gradation	Percent Finer (by weight)*
3”	100
No. 4 Sieve	50 - 100
No. 200 Sieve	10 - 40

Property	Property
Liquid Limit	30 (max)
Plasticity Index	15 (max)
Expansive Index**	20 (max)

*ASTM C 136, ** ASTM D 4829

The contractor shall notify the Geotechnical Engineer of import sources sufficiently ahead of their use so that the sources can be observed and approved as to the physical characteristic of the import material. For all import material, the contractor shall also submit current verified reports from a recognized analytical laboratory indicating that the import has a "not applicable" (Class S0) potential for sulfate attack based upon current ACI criteria and is "mildly corrosive" to ferrous metal and copper. The reports shall be accompanied by a written statement from the contractor that the laboratory test results are representative of all import material that will be brought to the job.

Engineered fill should be placed and compacted in horizontal lifts, using equipment and procedures that will produce recommended moisture contents and densities throughout the lift. Fill lifts should not exceed 10 inches loose thickness.

Compaction Requirements

Recommended compaction and moisture content criteria for engineered fill materials are as follows:

Material Type and Location	Per the Modified Proctor Test (ASTM D 1557)		
	Minimum Compaction Requirement (%)	Range of Moisture Contents for Compaction Above Optimum	
		Minimum	Maximum
On-site soils and low volume change imported fill (Engineered fill):			
Beneath foundations:	90	0%	+3%
Beneath interior slabs:	90	0%	+3%
Fill greater than 5 feet in depth	95	0%	+3%
Foundation backfill:	90	0%	+3%
Utility Trenches*:	90	0%	+3%
Bottom of excavation receiving fill:	90	0%	+3%
Aggregate base (Granular Engineered Fill):	95	0%	+3%

* Upper 12 inches should be compacted to 95% within pavement and structural areas. Low-volume change soils should be used in structural areas.

Grading and Drainage

Positive drainage should be provided during construction and maintained throughout the life of the development. Infiltration of water into utility trenches or foundation excavations should be prevented during construction. Backfill against footings and in utility line trenches should be well compacted and free of all construction debris to reduce the possibility of moisture infiltration.

Properly designed and constructed foundations can be seriously damaged by neglecting to take into account the effects of drainage and regularly verify performance of drainage systems. Any flatwork adjacent to the structure should slope a minimum of 1 percent for a distance of 10 feet. Exposed exterior subgrade (soil or non-paved areas) should slope away from the structure at a minimum slope of 1/2 inch per foot for a distance of 8 to 10 feet beyond the structure perimeter.

Utility Trenches

It is anticipated that the on-site soils will provide suitable support for underground utilities and piping that may be installed. Any soft and/or unsuitable material encountered at the bottom of excavations should be removed and be replaced with an adequate bedding material. A non-expansive granular material with a sand equivalent greater than 30 is recommended for bedding and shading of utilities, unless otherwise allowed by the utility manufacturer.

On-site materials are considered suitable for backfill of utility and pipe trenches from one foot above the top of the pipe to the final ground surface, provided the material is free of organic matter and deleterious substances.

Trench backfill should be mechanically placed and compacted as discussed earlier in this report. Compaction of initial lifts should be accomplished with hand-operated tampers or other lightweight compactors. Where trenches are placed beneath slabs or footings, the backfill should satisfy the gradation and expansion index requirements of engineered fill discussed in this report. Flooding or jetting for placement and compaction of backfill is not recommended.

Construction Considerations

Upon completion of filling and grading, care should be taken to maintain the subgrade moisture content prior to construction of floor slabs and pavements. Construction traffic over the completed subgrade should be avoided to the extent practical. The site should also be graded to prevent ponding of surface water on the prepared subgrades or in excavations. If the subgrade should become desiccated, saturated, or disturbed, the affected material should be removed or these materials should be scarified, moisture conditioned, and recompacted prior to floor slab and pavement construction.

On-site silt soils may pump, and unstable subgrade conditions could develop during general construction operations, particularly if the soils are wetted and/or subjected to repetitive construction traffic. The use of light construction equipment would aid in reducing subgrade disturbance. The use of remotely operated equipment, such as a backhoe, would be beneficial to perform cuts and reduce subgrade disturbance.

Should unstable subgrade conditions develop stabilization measures will need to be employed. Stabilization measures may include placement of aggregate base and multi-axial geogrid. Use of lime, fly ash, kiln dust or cement could also be considered as a stabilization technique. Laboratory evaluation is recommended to determine the effect of chemical stabilization on subgrade soils prior to construction.

We recommend that the earthwork portion of this project be completed during extended periods of dry weather if possible. If earthwork is completed during the wet season (typically November through April) it may be necessary to take extra precautionary measures to protect subgrade soils. Wet season earthwork operations may require additional mitigative measures beyond that which would be expected during the drier summer and fall months. This could include diversion of surface runoff around exposed soils and draining of ponded water on the site. Once subgrades are established, it may be necessary to protect the exposed subgrade soils from construction traffic.

As a minimum, excavations should be performed in accordance with OSHA 29 CFR, Part 1926, Subpart P, “Excavations” and its appendices, and in accordance with any applicable local, and/or state regulations.

Construction site safety is the sole responsibility of the contractor who controls the means, methods, and sequencing of construction operations. Under no circumstances shall the information provided herein be interpreted to mean Terracon is assuming responsibility for construction site safety, or the contractor's activities; such responsibility shall neither be implied nor inferred.

Construction Observation and Testing

The geotechnical engineer should be retained during the construction phase of the project to observe earthwork and to perform necessary tests and observations during subgrade preparation, over-excavation, construction of benching/keyways, proof-rolling, placement and compaction of controlled compacted fills, backfilling of excavations to the completed subgrade.

The exposed subgrade and each lift of compacted fill should be tested, evaluated, and reworked as necessary until approved by the Geotechnical Engineer prior to placement of additional lifts. Each lift of fill should be tested for density and water content at a frequency of at least one test for every 2,500 square feet of compacted fill in the building area. One density and water content test should be performed on each lift for every 50 linear feet of compacted utility trench backfill. These testing frequencies may be adjusted in the field by the Geotechnical Engineer of Record to suit actual construction conditions.

In areas of foundation excavations, the bearing subgrade should be evaluated under the direction of the Geotechnical Engineer. In the event that unanticipated conditions are encountered, the Geotechnical Engineer should prescribe mitigation options.

In addition to the documentation of the essential parameters necessary for construction, the continuation of the Geotechnical Engineer into the construction phase of the project provides the continuity to maintain the Geotechnical Engineer’s evaluation of subsurface conditions, including assessing variations and associated design changes.

MAT FOUNDATIONS

Provided site preparation has been performed in accordance with the recommendations provided in the **Earthwork** section of this report, the proposed structure improvements shall be supported by **Mat Slab Foundations** utilizing the following design parameters.

Item	Description
Maximum Net Allowable Bearing pressure [1, 2]	1000 pounds per square foot (psf)
Required Bearing Stratum [3]	Minimum 24 inches of compacted non expansive engineered fill
Passive Resistance [4,8] **(equivalent fluid pressure)**	350 pcf
Coefficient of Sliding Friction [5,8]	0.38 (compacted engineered fill)
Minimum Embedment below Finished Grade [6]	12 inches
Estimated Total Settlement from Structural Loads [1,2]	1 inch
Estimated Differential Settlement [2, 7]	1/2 of total settlement over 40 feet
Design Modulus of Subgrade Reaction, k	k_1 = 150 psi/in $K_{(BxB)} = K_1 \left(\frac{B+1}{2B}\right)^2$ $K_{(BxL)} = \frac{K_{(BxB)}\left(1 + 0.5 * \left(\frac{B}{L}\right)\right)}{1.5}$ Where: k_1 = coefficient of subgrade reaction of foundations measuring 1 ft. x 1ft. $K_{(BxB)}$ = coefficient of subgrade modulus for a square foundation having dimensions BxB. $K_{(BxL)}$ = coefficient of subgrade modulus for a rectangular foundation having dimensions BxL.

Item	Description
	1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the foundation base elevation. A factor of safety has been applied. This bearing pressure can be increased by 1/3 for transient loads unless those loads have been factored to account for transient conditions. Values assume that exterior grades are no steeper than 20% within 10 feet of structure. The bearing pressure provided assumes a rigid mat slab design that applies a uniform pressure across the footprint of the slab. If the mat slab will be flexible resulting in variable pressures across the slab, Terracon should be contacted to collaborate with the structural engineer to determine the anticipated settlement due to the variable pressures across the slab. 2. Values provided are for maximum loads noted in **Project Description**. 3. Unstable or soft soils should be over-excavated and replaced according to the recommendations present in **Earthwork.** 4. Use of passive earth pressures require the sides of the excavation for the foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the foundation forms be removed, and compacted structural fill be placed against the vertical foundation face. 5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions. 6. Embedment necessary to minimize the effects of seasonal water content variations. 7. Differential settlements are as measured over a span of 40 feet. 8. Passive pressure and sliding friction may be combined to resist sliding provided the passive pressure is reduced by 50 percent.

SHALLOW FOUNDATIONS

If the site has been prepared in accordance with the requirements noted in **Earthwork**, the following design parameters are provided for the option that the proposed building improvements or canopy structure may be supported on a shallow foundation system.

Design Parameters – Compressive Loads

Item	Description
Maximum Net Allowable Bearing pressure [1, 2]	3,000 psf
Required Bearing Stratum [3]	Firm native soil or compacted non-expansive engineered fill.
Minimum Foundation Dimensions	Columns: 18 inches Continuous: 12 inches
Passive Resistance [4, 8] **(equivalent fluid pressures)**	350 pcf
Coefficient of Sliding Friction [5,8]	0.38
Minimum Embedment below Finished Grade [6]	12 inches

Item	Description
Estimated Total Settlement from Structural Loads [2]	1 inch
Estimated Differential Settlement [2, 7]	1/2 of total settlement over 40 feet

1. The maximum net allowable bearing pressure is the pressure in excess of the minimum surrounding overburden pressure at the footing base elevation. A factor of safety has been applied. These bearing pressures can be increased by 1/3 for transient loads unless those loads have been factored to account for transient conditions. Values assume that exterior grades are relatively flat around the structure.
2. Values provided are for maximum loads noted in **Project Description**.
3. Fill should be placed per the recommendations presented in **Earthwork** and to the width shown in the following section. Unsuitable or soft or loose soils should be over-excavated and replaced per the recommendations presented in **Earthwork**.
4. Use of passive earth pressures require the sides of the excavation for the spread footing foundation to be nearly vertical and the concrete placed neat against these vertical faces or that the footing forms be removed and compacted structural fill be placed against the vertical footing face.
5. Can be used to compute sliding resistance where foundations are placed on suitable soil/materials. Should be neglected for foundations subject to net uplift conditions.
6. Embedment necessary to minimize the effects of seasonal water content variations. Finished grade is defined as the lowest adjacent grade within five feet of the foundation for perimeter (exterior) footings.
7. Differential settlements are as measured over a span of 40 feet.
8. Passive pressure and sliding friction may be combined to resist sliding provided the passive pressure is reduced by 50 percent.

PAVEMENTS

General Pavement Comments

Pavement designs are provided for the traffic conditions and pavement life conditions as noted in **Project Description** and in the following sections of this report. A critical aspect of pavement performance is site preparation. Pavement designs noted in this section must be applied to the site which has been prepared as recommended in the **Earthwork** section.

On most project sites, the site grading is accomplished relatively early in the construction phase. Fills are placed and compacted in a uniform manner. However, as construction proceeds, excavations are made into these areas, rainfall and surface water saturates some areas, heavy traffic from concrete trucks and other delivery vehicles disturbs the subgrade and many surface irregularities are filled in with loose soils to improve trafficability temporarily. As a result, the pavement subgrades, initially prepared early in the project, should be carefully evaluated as the time for pavement construction approaches.

We recommend the moisture content and density of the top 12 inches of the subgrade be evaluated and the pavement subgrades be proofrolled within two days prior to commencement of actual paving operations. Areas not in compliance with the required ranges of moisture or density should be moisture conditioned and recompacted. Particular attention should be paid to high traffic areas that were rutted and disturbed earlier and to areas where backfilled trenches are located. Areas where unsuitable conditions are located should be repaired by removing and replacing the materials with properly compacted fills.

After proof rolling and repairing deep subgrade deficiencies, the entire subgrade should be scarified and developed as recommended in the **Earthwork** section this report to provide a uniform subgrade for pavement construction. Areas that appear severely desiccated following site stripping may require further undercutting and moisture conditioning. If a significant precipitation event occurs after the evaluation or if the surface becomes disturbed, the subgrade should be reviewed by qualified personnel immediately prior to paving. The subgrade should be in its finished form at the time of the final review.

Pavement Design Parameters

Design of Asphaltic Concrete (AC) pavement sections were calculated using the Caltrans Highway Design Manual, latest edition, and a 20-year design life. Design of Portland Cement Concrete (PCC) pavement sections were designed using ACI 330R, “Guide for the Design and Construction of Concrete Parking Lots.”

Bulk samples of the near surface native soils were collected to perform Hveem Stabilometer (R-Value) testing. One representative bulk sample was selected for testing. The test resulted in an R-value of 17 and was used to calculate AC pavement section. A modulus of subgrade reaction of 150 pci was use for the PCC pavement designs.

Recommendations for conventional pavement sections are presented in the following section. The recommendations are based on the subgrade being in a firm and unyielding condition.

Pavement Section Thicknesses

The following table provides options for AC and PCC Sections:

Typical Pavement Section (inches)					
Traffic Area	**Alternative**	**Asphalt Concrete (AC) Surface Course[1]**	**Portland Cement Concrete (PCC) [1,2]**	**Aggregate Base (AB) Course [1]**	**Total Thickness**
Auto Parking Assumed Traffic Index (TI) = 4.5	PCC	--	5.0	4.0	11.5
	AC	2.5	--	8.0	10.5
Auto Drive Areas Assumed Traffic Index (TI) = 5.5	PCC	--	5.0	4.0	11.5
	AC	3.0	--	10.0	13.0
Light Truck Drive Areas Assumed Traffic Index (TI) = 6.5	PCC	--	6.0	6.0	12.5
	AC	4.0	--	11.5	15.5

1. All materials should meet the current Caltrans Highway Design Manual specifications
2. Minimum compressive strength of 4,500 psi at 28 days, minimum modulus of rupture of 550 psi/in., 6-sack min. mix. PCC pavements are recommended for trash container pads and in any other areas subjected to heavy wheel loads and/or turning traffic. The trash container pad should be large enough to support the container and the tipping axle of the collection truck.

As more specific traffic information becomes available for the project specific and project traffic indexes are determined, we should be contacted to reevaluate the pavement calculations.

Rigid PCC pavements will perform better than AC in areas where short-radii turning and braking are expected due to better resistance to rutting and shoving. In addition, PCC pavement will perform better in areas subject to large or sustained loads. An adequate number of longitudinal and transverse control joints should be placed in the rigid pavement in accordance with ACI and/or AASHTO requirements. Expansion (isolation) joints must be full depth and should only be used to isolate fixed objects abutting or within the paved area.

Proper joint spacing will also be required to prevent excessive slab curling and shrinkage cracking. All joints should be sealed to prevent entry of foreign material and dowelled where necessary for load transfer.

We recommend all PCC pavement details for joint spacing, joint reinforcement, and joint sealing be prepared in accordance with American Concrete Institute (ACI 330R and ACI 325R.9). PCC pavements should be provided with mechanically reinforced joints (doweled or keyed) in accordance with ACI 330R. Where practical, we recommend early-entry cutting of crack-control joints in PCC pavements. Cutting of the concrete in its "green" state typically reduces the potential for micro-cracking of the pavements prior to the crack control joints being formed, compared to cutting the joints after the concrete has fully set. Micro-cracking of pavements may lead to crack formation in locations other than the sawed joints, and/or reduction of fatigue life of the pavement.

Thickened edges should be used along outside edges of concrete pavements. Edge thickness should be at least 2 inches thicker than concrete pavement thickness and taper to the actual concrete pavement thickness 36 inches inward from the edge. Integral curbs may be used in lieu of thickened edges.

Pavement Drainage

Pavements should be sloped to provide rapid drainage of surface water. Water allowed to pond on or adjacent to the pavements could saturate the subgrade and contribute to premature pavement deterioration. In addition, the pavement subgrade should be graded to provide positive drainage within the granular base section. Appropriate sub-drainage or connection to a suitable daylight outlet should be provided to remove water from the granular subbase.

The pavement surfacing, and adjacent sidewalks should be sloped to provide rapid drainage of surface water. Water should not be allowed to pond on or adjacent to these grade-supported slabs, since this could saturate the subgrade and contribute to premature pavement or slab deterioration. In areas where pavement sections abut bioswales, curb should extend below the planned AB section to intercept water infiltration below the pavement section. Water migration in and out of the pavement sections may result in repeated shrinkage and swelling and increasing pavement section fatigue.

Openings in pavements, such as decorative landscaped areas, are sources for water infiltration into surrounding pavement systems. Water can collect in the islands and migrate into the surrounding subgrade soils thereby degrading support of the pavement. This is especially applicable for islands with raised concrete curbs, irrigated foliage, and low permeability near-surface soils. The civil design for the pavements with these conditions should include features to restrict or to collect and discharge excess water from the islands. Examples of features are edge drains connected to the storm water collection system, longitudinal subdrains, or other suitable outlet and impermeable barriers preventing lateral migration of water such as a cutoff wall installed to a depth below the pavement structure.

Dishing in parking lots surfaced with AC is usually observed in frequently used parking stalls (such as near the front of buildings) and occurs under the wheel footprint in these stalls. The use of

higher-grade asphaltic cement, or surfacing these areas with PCC, should be considered. The dishing is exacerbated by factors such as irrigated islands or planter areas, sheet surface drainage to the front of structures, and placing the ACC directly on a compacted clay subgrade.

Pavement Maintenance

The pavement sections represent minimum recommended thicknesses and, as such, periodic maintenance should be anticipated. Therefore, preventive maintenance should be planned and provided for through an on-going pavement management program. Maintenance activities are intended to slow the rate of pavement deterioration and to preserve the pavement investment. Maintenance consists of both localized maintenance (e.g. crack and joint sealing and patching) and global maintenance (e.g. surface sealing). Preventive maintenance is usually the priority when implementing a pavement maintenance program. Additional engineering observation is recommended to determine the type and extent of a cost-effective program. Even with periodic maintenance, some movements and related cracking may still occur, and repairs may be required.

Pavement performance is affected by its surroundings. In addition to providing preventive maintenance, the civil engineer should consider the following recommendations in the design and layout of pavements:

1. Final grade adjacent to paved areas should slope down from the edges at a minimum 2%.
2. Subgrade and pavement surfaces should have a minimum 2% slope to promote proper surface drainage.
3. Install below pavement drainage systems surrounding areas anticipated for frequent wetting.
4. Install joint sealant and seal cracks immediately.
5. Seal all landscaped areas in or adjacent to pavements to reduce moisture migration to subgrade soils.
6. Place compacted, low permeability backfill against the exterior side of curb and gutter.
7. Place curb, gutter and/or sidewalk directly on clay subgrade soils rather than on unbound granular base course materials.

PERCOLATION TESTING

We performed a total of 5 percolation tests. The borings were drilled using a truck-mounted drill rig to depths of approximately 5 feet bgs. The approximate location of the test hole is shown on the **Exploration Plan**. The purpose in performing the percolation test is to conduct an evaluation of the site for the proposed septic system. Based on the conceptual plan the proposed areas for the septic system is located where undocumented fill and organic material was encountered. As noted in our Earthwork section of this report, we recommend over excavating the undesirable material and replacing with approved compacted fill. Once the areas have been restored an

updated evaluation, including percolation testing should be completed, and an appropriate septic system can be designed. The procedure and results of our percolation testing is provided below:

Percolation rates are provided in the following table:

Test Location	Test Depth (feet bgs)	Soil Classification	Measured Percolation Rate (in/hr.)	Measured Infiltration Rate[1,2] (in/hr.)	Average Head (in)
S-1	5	Silty Sand	0.06	0.00	83
S-2	5	Silty Sand	0.06	0.00	82
S-3	5	Silty Sand	0.06	0.00	82
S-4	5	Silty Sand	0.12	0.00	82
S-5	5	Silty Sand	1.44	0.02	82

1. If proposed infiltration system will mainly rely on vertical downward seepage, the correlated infiltration rates should be used. The infiltration rates were correlated using the Porchet method.
2. The Porchet Formula (aka Inverse Borehole Formula) was used to calculate the test infiltration rates which takes into account sidewall area of the borehole.

The field test results are not intended to be design rates. They represent the results of our tests, at the depths and locations indicated, as described above.

If an infiltration system is required onsite, the design rate should be determined by the designer by applying an appropriate factor of safety. The designer should take into consideration the variability of the native soils when selecting appropriate design rates. With time, the bottoms of infiltration systems tend to plug with organics, sediments, and other debris. Long term maintenance will likely be required to remove these deleterious materials to help reduce decreases in actual percolation rates.

The percolation tests were performed with clear water, whereas the storm water will likely not be clear, but may contain organics, fines, and grease/oil. The presence of these deleterious materials will tend to decrease the rate that water percolates from the infiltration systems. Design of the stormwater infiltration systems should account for the presence of these materials and should incorporate structures/devices to remove these deleterious materials. A safety factor should be applied to these measured rates.

Based on the soils encountered in our borings, we expect the percolation rates of the soils could be different than measured in the field due to variations in fines content. The design elevation and size of the proposed infiltration system should account for this expected variability in infiltration rates.

Operation of heavy equipment during construction may densify the receptor soils below the infiltration facility. The soils exposed in the bottom of the infiltration facility should not be

compacted and should remain in their native condition. This may require scarification of the soils prior to construction.

Infiltration testing should be performed after construction of the infiltration system to verify the design infiltration rates. It should be noted that siltation and vegetation growth along with other factors may affect the infiltration rates of the infiltration areas. The actual infiltration rate may vary from the values reported here. Infiltration systems should be located a minimum of 10 feet from any existing or proposed foundation system.

GENERAL COMMENTS

Our analysis and opinions are based upon our understanding of the project, the geotechnical conditions in the area, and the data obtained from our site exploration. Natural variations will occur between exploration point locations or due to the modifying effects of construction or weather. The nature and extent of such variations may not become evident until during or after construction. Terracon should be retained as the Geotechnical Engineer, where noted in this report, to provide observation and testing services during pertinent construction phases. If variations appear, we can provide further evaluation and supplemental recommendations. If variations are noted in the absence of our observation and testing services on-site, we should be immediately notified so that we can provide evaluation and supplemental recommendations.

Our Scope of Services does not include either specifically or by implication any environmental or biological (e.g., mold, fungi, bacteria) assessment of the site or identification or prevention of pollutants, hazardous materials or conditions. If the owner is concerned about the potential for such contamination or pollution, other studies should be undertaken.

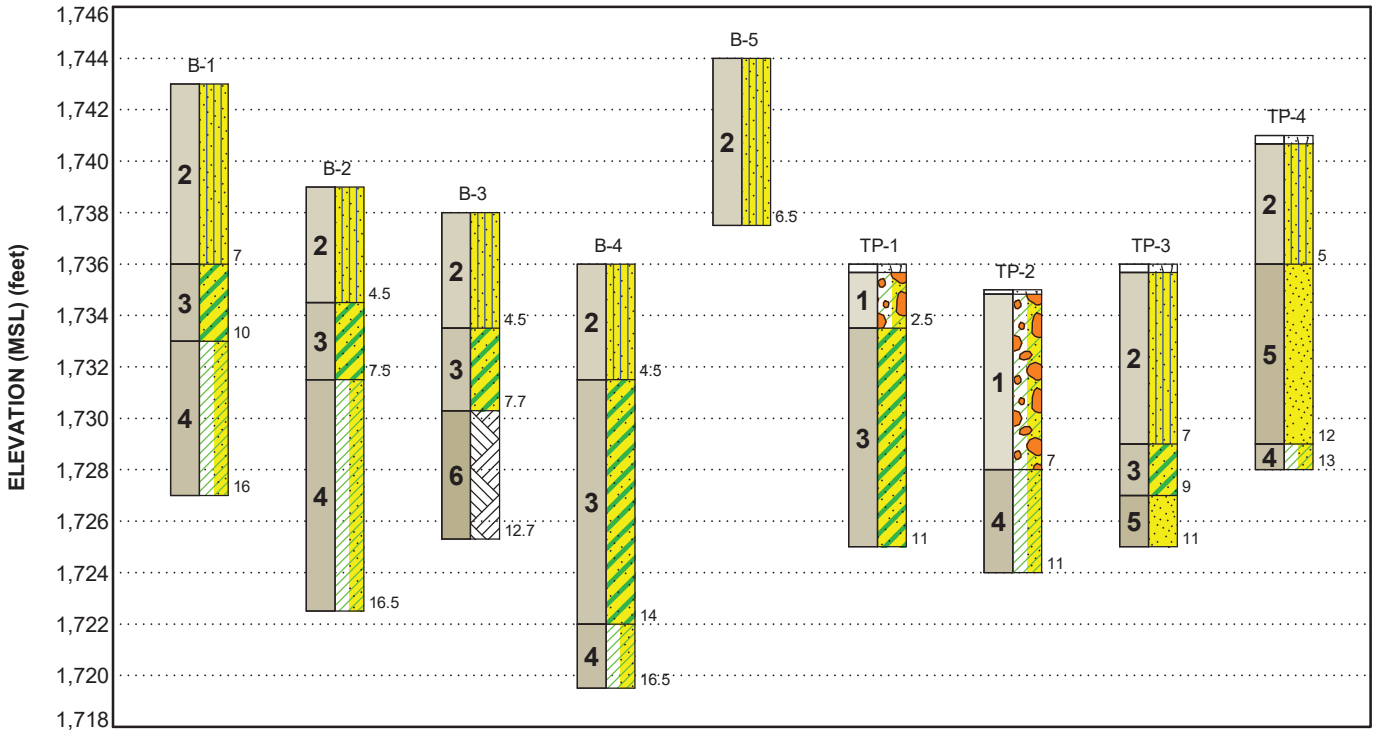
Our services and any correspondence or collaboration through this system are intended for the sole benefit and exclusive use of our client for specific application to the project discussed and are accomplished in accordance with generally accepted geotechnical engineering practices with no third-party beneficiaries intended. Any third-party access to services or correspondence is solely for information purposes to support the services provided by Terracon to our client. Reliance upon the services and any work product is limited to our client and is not intended for third parties. Any use or reliance of the provided information by third parties is done solely at their own risk. No warranties, either express or implied, are intended or made.

Site characteristics as provided are for design purposes and not to estimate excavation cost. Any use of our report in that regard is done at the sole risk of the excavating cost estimator as there may be variations on the site that are not apparent in the data that could significantly impact excavation cost. Any parties charged with estimating excavation costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing. Site safety, and cost estimating including, excavation support, and dewatering requirements/design are the responsibility of others. If changes in the nature, design, or location

of the project are planned, our conclusions and recommendations shall not be considered valid unless we review the changes and either verify or modify our conclusions in writing.

FIGURES

Contents:



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

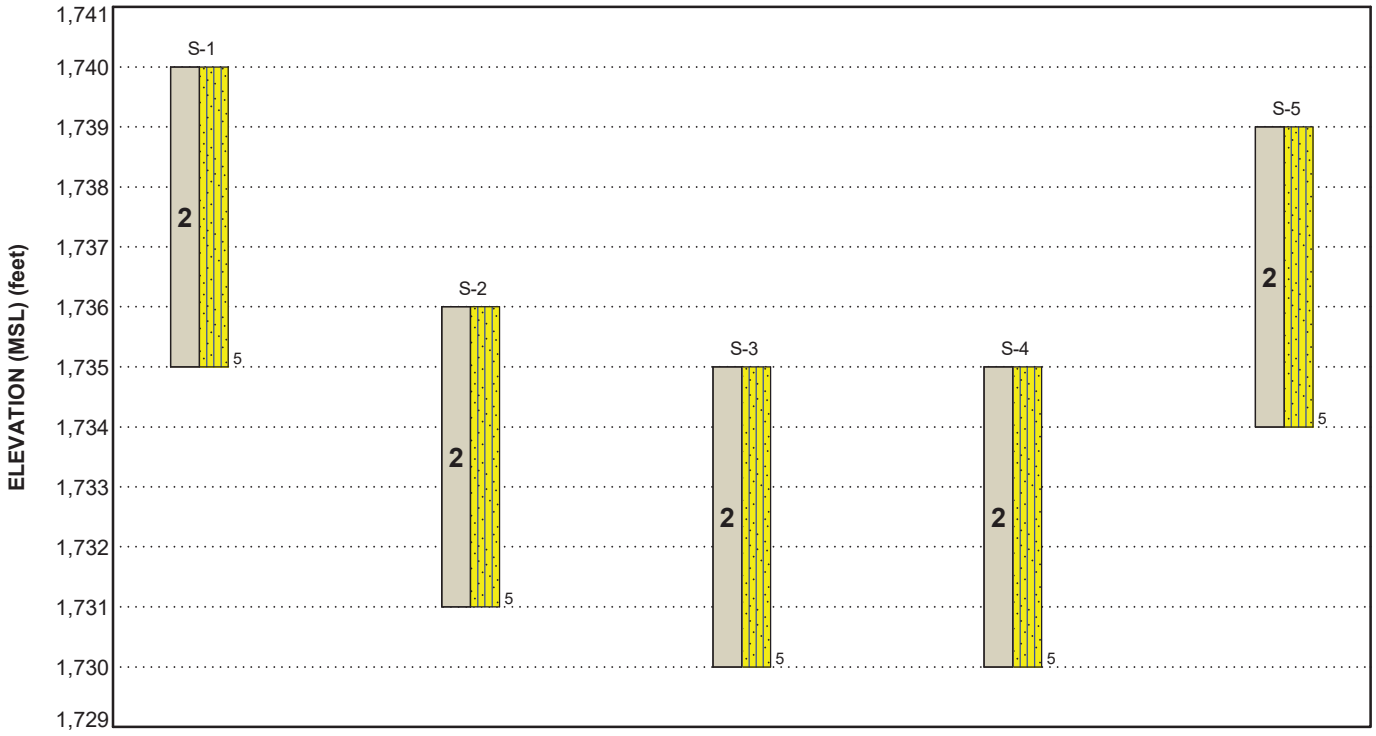
Model Layer	Layer Name	General Description
1	Clayey Gravel with Sand	Fine to medium grained, nonplastic, pieces of slate and asphalt debris present.
2	Silty Sand	Medium dense to dense, nonplastic to low plasticity, fine to medium grained.
3	Clayey Sand	Medium dense to dense, nonplastic to low plasticity, fine to medium grained.
4	Lean Clay with Sand	Very stiff to hard, low to medium plasticity, fine to medium grained.
5	Poorly Graded Sand	Fine grained, organics present.
6	Mariposa Formation	Extremely strong, slightly weathered, slightly fractured, extremely close fracture spacing, laminated bedding.

LEGEND

- Silty Sand
- Clayey Sand
- Lean Clay with Sand
- Bedrock
- Topsoil
- Clayey Gravel with Sand
- Poorly-graded Sand

NOTES:

Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.



This is not a cross section. This is intended to display the Geotechnical Model only. See individual logs for more detailed conditions.

LEGEND

Silty Sand

Model Layer	Layer Name	General Description
1	Clayey Gravel with Sand	Fine to medium grained, nonplastic, pieces of slate and asphalt debris present.
2	Silty Sand	Medium dense to dense, nonplastic to low plasticity, fine to medium grained.
3	Clayey Sand	Medium dense to dense, nonplastic to low plasticity, fine to medium grained.
4	Lean Clay with Sand	Very stiff to hard, low to medium plasticity, fine to medium grained.
5	Poorly Graded Sand	Fine grained, organics present.
6	Mariposa Formation	Extremely strong, slightly weathered, slightly fractured, extremely close fracture spacing, laminated bedding.

NOTES:

Layering shown on this figure has been developed by the geotechnical engineer for purposes of modeling the subsurface conditions as required for the subsequent geotechnical engineering for this project.

ATTACHMENTS

EXPLORATION AND TESTING PROCEDURES

Field Exploration

Number of Borings	Boring Depth (feet)	Planned Location
4	12 ¾ to 16 ½	Proposed Structures
1	6 ½	Pavement Area
5	5	Septic Area

Boring Layout and Elevations: Terracon personnel provided the boring layout. Coordinates were obtained with a handheld GPS unit (estimated horizontal accuracy of about ±10 feet) and approximate elevations were obtained by interpolation from Google Earth. If more precise elevations and boring layout are desired, we recommend borings be surveyed.

Subsurface Exploration Procedures: We advanced the borings with a truck-mounted mounted rotary drill rig using continuous hollow stem flight augers. We obtained samples at 2.5-foot intervals within the top 10 feet bgs and at intervals of 5 feet thereafter. In the split-barrel sampling procedure, a standard 2-inch outer diameter split-barrel sampling spoon was driven into the ground by a 140-pound automatic hammer falling a distance of 30 inches. The number of blows required to advance the sampling spoon the last 12 inches of a normal 18-inch penetration was recorded as the Standard Penetration Test (SPT) resistance value. The SPT resistance values, also referred to as N-values, are indicated on the boring logs at the test depths. A 3.0-inch O.D. split-barrel Modified California sampling spoon with 2.5-inch I.D. tube lined sampler was also be used for sampling. The Modified California split-barrel sampling procedures are similar to standard split spoon sampling procedure; however, blow counts are recorded for 6-inch intervals for a total of 12 inches of penetration. In additions, rock coring was performed in accordance with ASTM D2113 using HQ wireline coring methods with rock logging performed in accordance with ASTM D5434. We observed and record groundwater levels during drilling and sampling and upon completion of the borings.

Following drilling operations, a total of four (4) test pits were completed in the planned improvement area and existing side slope, as shown on our “Exploration Map”. Excavation of the test pits were completed with a Case 580 backhoe equipped with a 24-inch bucket. Follow excavation, the holes were backfilled with the stockpiled material and wheel compacted to the best that can be achieved. Density testing and proper moisture conditioning were not performed at that time.

After drilling to investigate the soil profile, the sidewalls of the borings were cleaned, and a 2-inch-thick layer of gravel was placed at the bottom of the holes. A 2-inch diameter PVC pipe was installed on top of the gravel and gravel was placed in the annular space. The percolation test

holes were filled with clean water and left to pre-soak for a period of approximately 24 hours. Testing began after the pre-soak period. At the beginning of the test, the pipes were refilled with water and readings were taken at standardized time intervals. Measurements were taken until the rate of drop off did not vary by more than 10% from the previous measurement. The percolation tests were conducted over the span of 2 to 3½ hours.

The sampling depths, penetration distances, and other sampling information was recorded on the field boring logs. The samples were placed in appropriate containers and taken to our soil laboratory for testing and classification by an Engineer. Our exploration team prepared field boring logs as part of the drilling operations. These field logs included visual classifications of the materials encountered during drilling and our interpretation of the subsurface conditions between samples. Final boring logs were prepared from the field logs. The final boring logs represent the Engineer's interpretation of the field logs and include modifications based on observations and tests of the samples in our laboratory.

Laboratory Testing

The project engineer reviewed the field data and assigned laboratory tests to understand the engineering properties of the various soil strata, as necessary, for this project. Procedural standards noted below are for reference to methodology in general. In some cases, variations to methods were applied because of local practice or professional judgment. Standards noted below include reference to other, related standards. Such references are not necessarily applicable to describe the specific test performed.

- ASTM D2216 Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass
- ASTM 7263 Standard Test Methods for laboratory Determination of Density and Unit Weight of Soil Specimens
- ASTM D4318 Standard Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- ASTM D1140 Standard Test Methods for Determining the Amount of Material Finer than 75-µm (No. 200) Sieve in Soils by Washing
- ASTM D4829 Standard Test Method for Expansion Index of Soils
- ASTM D2844 Standard Test Methods for Resistance R-Value and Expansion Pressure of Compacted Soils
- Corrosivity Testing including pH, chlorides, sulfates, sulfides, Redox potential, and electrical lab resistivity

The laboratory testing program included examination of soil samples by an engineer. Based on the material's texture and plasticity, we described and classified the soil samples in accordance with the Unified Soil Classification System.

SITE LOCATION AND EXPLORATION PLANS

Contents:

Site Location Plan
Exploration Plan

Note: All attachments are one page unless noted above.

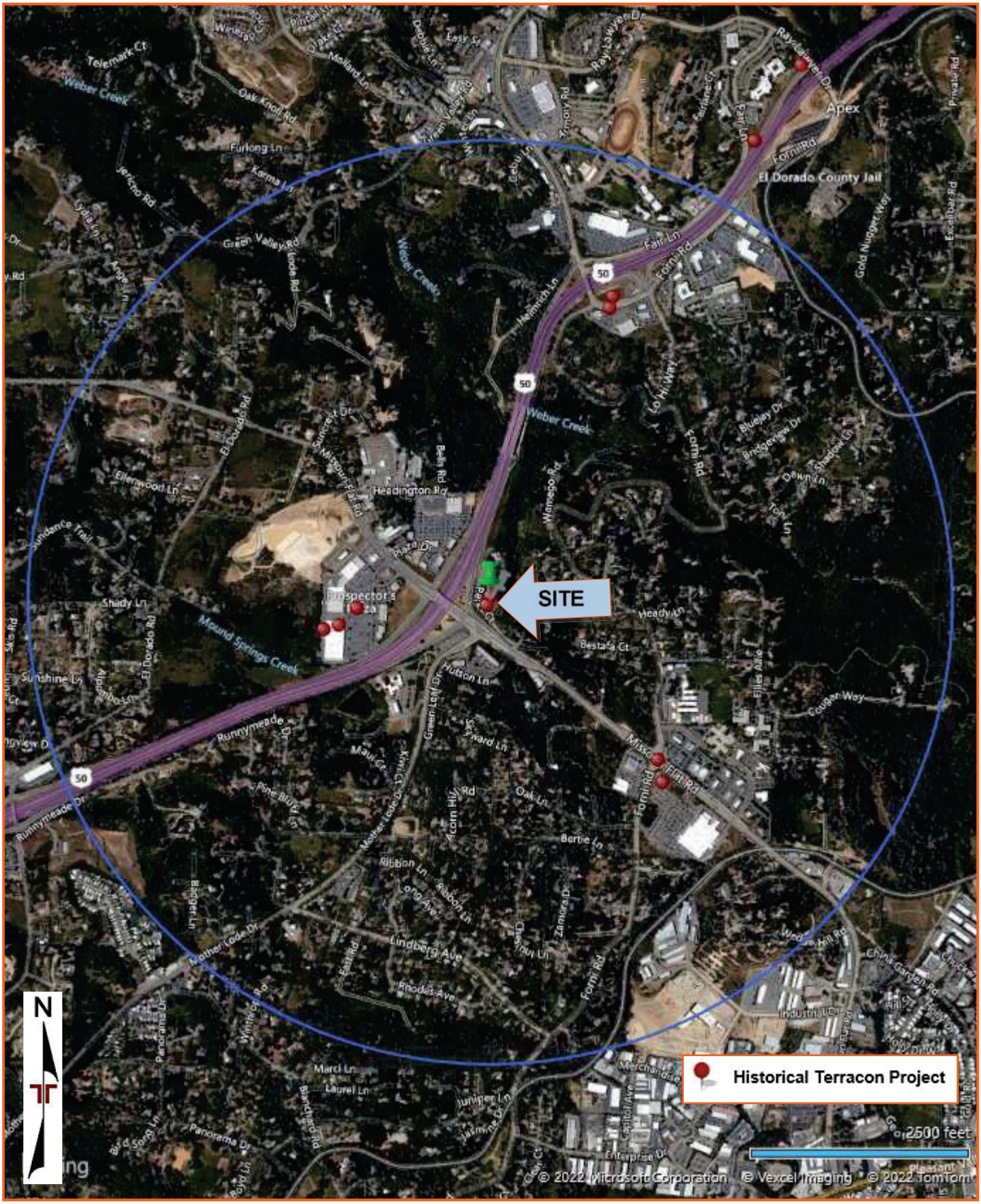


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

TOPOGRAPHIC MAP IMAGE COURTESY OF THE U.S. GEOLOGICAL SURVEY QUADRANGLES INCLUDE: TAYLOR MONUMENT, CA (1/1/1980).

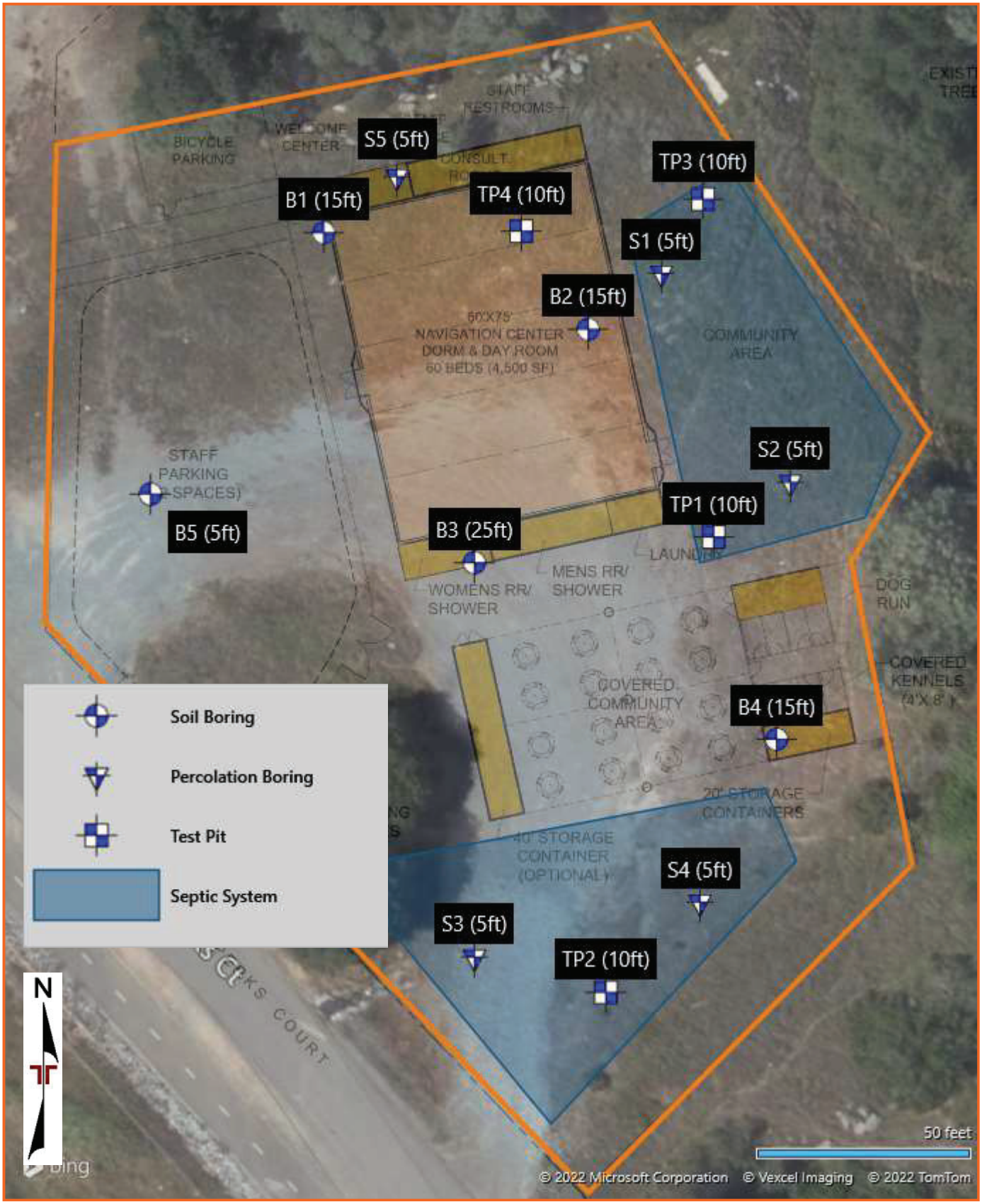


DIAGRAM IS FOR GENERAL LOCATION ONLY, AND IS NOT INTENDED FOR CONSTRUCTION PURPOSES

AERIAL PHOTOGRAPHY PROVIDED BY MICROSOFT BING MAPS

EXPLORATION RESULTS

Contents:

Note: All attachments are one page unless noted above.

BORING LOG NO. B-1

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

LOCATION See Exploration Plan

Latitude: 38.7115° Longitude: -120.8376°

Approximate Surface Elev.: 1743 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
2		0.0	1743+/-												
							8-5-14 N=19					9.1			
				5			15-26-21			4.5 (HP)		14.3			
3		7.0	1736+/-												
							9-10-11 N=21					11.8			
				10			6-14-36			4.5 (HP)		9.6			
4		10.0	1733+/-												
				15			34-50					10.6			
		16.0	1727+/-												

SILTY SAND (SM), trace gravel, fine to medium grained, subangular, orange brown, medium dense to dense, weak to moderate cementation, gravel is approximately 1 inch in dimension

CLAYEY SAND (SC), fine grained, low plasticity, gray brown, medium dense

LEAN CLAY WITH SAND (CL), trace gravel, fine grained, subangular, low plasticity, dark brown to light brown, hard, moderate cementation, gravel is approximately 1 inch in dimension

Boring Terminated at 16 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4" Solid Stem Auger

Abandonment Method:
Boring backfilled with neat cement grout. Capped with auger cuttings.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Boring Started: 06-01-2022 | Boring Completed: 06-01-2022

Drill Rig: CME 75 | Driller: H1 Drilling Co.

Project No.: NB225050

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

BORING LOG NO. B-2

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

LOCATION See Exploration Plan

Latitude: 38.7115° Longitude: -120.8374°

Approximate Surface Elev.: 1739 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
2		0													
							17-16-22			4.5 (HP)		15.5	108		
		4.5	1734.5+/-												
3				5			8-13-14 N=27					7.8			
		7.5	1731.5+/-												
4							15-43-44			3.75 (HP)		9.4			
				10			9-10-12 N=22					16.2			
				15											
		16.5	1722.5+/-				8-14-18			4.5 (HP)		15.6	108		

SILTY SAND (SM), fine grained, orange brown, dense, weak cementation

CLAYEY SAND (SC), fine grained, nonplastic, gray brown, medium dense

LEAN CLAY WITH SAND (CL), trace gravel, fine grained, subangular, low to medium plasticity, gray brown to orange brown, hard, weak cementation, gravel is approximately 0.5 inch in dimension
very stiff

hard

Boring Terminated at 16.5 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4" Solid Stem Auger

Abandonment Method:
Boring backfilled with neat cement grout. Capped with auger cuttings.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Boring Started: 06-01-2022 | Boring Completed: 06-01-2022

Drill Rig: CME 75 | Driller: H1 Drilling Co.

Project No.: NB225050

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

BORING LOG NO. B-3

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

LOCATION See Exploration Plan

Latitude: 38.7113° Longitude: -120.8375°

Approximate Surface Elev.: 1738 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
2		0													
							12-13-31			4.5 (HP)		8.3			
		4.5	1733.5+/-												
3				5			7-11-15 N=26					11.5			
		7.7	1730.3+/-												
			very dense				50/2"					11.3			
6				10				75	7758						
								50							
		12.7	1725.3+/-												

Boring Terminated at 12.7 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4" Solid Stem Auger to 7.7 feet
Coring advanced with 3 inch NQ/NX rock core barrel to 12.7 feet.

Abandonment Method:
Boring backfilled with neat cement grout. Capped with auger cuttings.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Boring Started: 06-01-2022	Boring Completed: 06-01-2022
Drill Rig: CME 75	Driller: H1 Drilling Co.
Project No.: NB225050	

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

BORING LOG NO. B-4

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

LOCATION See Exploration Plan
Latitude: 38.7112° Longitude: -120.8372°
Approximate Surface Elev.: 1736 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
2															
							6-4-5 N=9					9.9		NP	21
		4.5	1731.5+/-												
3				5			6-16-21 N=37					11.7			28
							6-23-8 N=31					13.5			
				10			6-5-6			3.25 (HP)		15.3			
4		14.0	1722+/-												
				15			23-9-13			3.0 (HP)		18.5			
		16.5	1719.5+/-												

SILTY SAND (SM), trace gravel, fine to medium grained, subangular, brown, loose, gravel is approximately 1 inch in dimension

CLAYEY SAND (SC), trace gravel, fine to medium grained, subangular, low plasticity, orange brown, dense, weak cementation, gravel is approximately 0.5 to 2 inches in dimension

medium dense

LEAN CLAY WITH SAND (CL), fine grained, low to medium plasticity, brown, very stiff

Boring Terminated at 16.5 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4" Solid Stem Auger

Abandonment Method:
Boring backfilled with neat cement grout. Capped with auger cuttings.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Boring Started: 06-01-2022 | Boring Completed: 06-01-2022

Drill Rig: CME 75 | Driller: H1 Drilling Co.

Project No.: NB225050

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

BORING LOG NO. B-5

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 38.7114° Longitude: -120.8378° Approximate Surface Elev.: 1744 (Ft.) +/- DEPTH / ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
2		**SILTY SAND (SM)**, trace gravel, fine to medium grained, subangular, red brown to orange brown, medium dense, weak cementation, gravel is approximately 1 inch in dimension	5			5-8-9 N=17					9.0			
						7-7-5 N=12					16.5			
		6.5 1737.5+/- ***Boring Terminated at 6.5 Feet***												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4" Solid Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Boring Started: 06-01-2022	Boring Completed: 06-01-2022
Drill Rig: CME 75	Driller: H1 Drilling Co.
Project No.: NB225050	

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

BORING LOG NO. S-1

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

LOCATION See Exploration Plan
Latitude: 38.7115° Longitude: -120.8373°
Approximate Surface Elev.: 1740 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
2															
						X	19-12-23 N=35					4.6			
						X	7-11-10 N=21					13.4			48
		5.0	1735+/-	5											

Boring Terminated at 5 Feet

SILTY SAND (SM), trace gravel, fine to medium grained, subangular, light brown, dense, gravel is approximately 1 inch in dimension

medium dense

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4" Solid Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Boring Started: 06-01-2022	Boring Completed: 06-01-2022
Drill Rig: CME 75	Driller: H1 Drilling Co.
Project No.: NB225050	

G & G Builders, Inc.

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

BORING LOG NO. S-2

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

LOCATION See Exploration Plan
Latitude: 38.7114° Longitude: -120.8372°
Approximate Surface Elev.: 1736 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
2															
							6-4-7 N=11					13.2			
							8-7-8 N=15					16.4			35
		5.0	1731+/-	5											

SILTY SAND (SM), trace gravel, fine grained, subangular, orange brown, medium dense, gravel is approximately 0.5 to 1 inch in dimension

Boring Terminated at 5 Feet

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4" Solid Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Boring Started: 06-01-2022	Boring Completed: 06-01-2022
Drill Rig: CME 75	Driller: H1 Drilling Co.
Project No.: NB225050	

G & G Builders, Inc.

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

BORING LOG NO. S-3

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 38.7111° Longitude: -120.8375° Approximate Surface Elev.: 1735 (Ft.) +/- DEPTH / ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
2		**SILTY SAND (SM)**, trace gravel, fine to medium grained, subangular, gray brown to red brown, dense, weak cementation, gravel is approximately 1 inch in dimension				15-21-16 N=37					10.6			
		medium dense 5.0 1730+/-				6-9-10 N=19					15.4			
		Boring Terminated at 5 Feet	5											

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4" Solid Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Boring Started: 06-01-2022	Boring Completed: 06-01-2022
Drill Rig: CME 75	Driller: H1 Drilling Co.
Project No.: NB225050	

G & G Builders, Inc.

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

BORING LOG NO. S-4

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

MODEL LAYER	GRAPHIC LOG	LOCATION See Exploration Plan Latitude: 38.7111° Longitude: -120.8373° Approximate Surface Elev.: 1735 (Ft.) +/- DEPTH / ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
2		**SILTY SAND (SM)**, trace gravel, fine grained, subangular, brown, medium dense, gravel is approximately 0.25 to 2 inches in dimension												
						17-15-11 N=26					8.4			30
						8-5-5 N=10					9.2			
		5.0 1730+/-	5											
		Boring Terminated at 5 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4" Solid Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Boring Started: 06-01-2022	Boring Completed: 06-01-2022
Drill Rig: CME 75	Driller: H1 Drilling Co.
Project No.: NB225050	

G & G Builders, Inc.

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

BORING LOG NO. S-5

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

LOCATION See Exploration Plan

Latitude: 38.7116° Longitude: -120.8376°

Approximate Surface Elev.: 1739 (Ft.) +/-

DEPTH ELEVATION (Ft.)

MODEL LAYER	GRAPHIC LOG	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
2													
				X	13-10-13 N=23					5.3			
				X	3-8-11 N=19					10.0			41

SILTY SAND (SM), trace gravel, fine to medium grained, subangular, light brown to orange brown, medium dense, weak cementation, gravel is approximately 1 inch in dimension

5.0 1734+/-

Boring Terminated at 5 Feet

5

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
4" Solid Stem Auger

Abandonment Method:
Boring backfilled with auger cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Boring Started: 06-01-2022 | Boring Completed: 06-01-2022

Drill Rig: CME 75 | Driller: H1 Drilling Co.

Project No.: NB225050

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

TEST PIT LOG NO. TP-1

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

LOCATION See Exploration Plan

Latitude: 38.7113° Longitude: -120.8373°

Approximate Surface Elev.: 1736 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DESCRIPTION	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		0.3	1735.7+/-	**TOPSOIL**, approximately 4 inches in thickness												
1		2.5	1733.5+/-	**FILL - CLAYEY GRAVEL WITH SAND (GC)**, fine to medium grained, subangular, nonplastic, light brown, pieces of slate and asphalt debris observed in sidewall									6.0			
3				**CLAYEY SAND (SC)**, trace gravel, fine to medium grained, subangular, low to medium plasticity, orange brown, gravel is approximately 0.5 to 3 inches in dimension	5						3.75 (HP)		12.0			
											4.5 (HP)		16.5			
													10.2			
		11.0	1725+/-		10								12.3			
				Test Pit Terminated at 11 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Case 580 Super M Equipped with 24 inch wide bucket.

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Test Pit Started: 06-02-2022	Test Pit Completed: 06-02-2022
Excavator: Backhoe	Operator: Ron Tilford Backhoe
Project No.: NB225050	

G & G Builders, Inc.

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

TEST PIT LOG NO. TP-2

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

LOCATION See Exploration Plan

Latitude: 38.7110° Longitude: -120.8374°

Approximate Surface Elev.: 1735 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
1		0.2	1734.8+/-												
		TOPSOIL, approximately 2 inches in thickness													
		FILL - CLAYEY GRAVEL WITH SAND (GC), fine to coarse grained, subangular, low plasticity, light brown to red brown, gravel is approximately 0.5 to 3 inches in dimension								4.5 (HP)		5.8			
				5						4.0 (HP)		12.9			48
4		7.0	1728+/-												
		LEAN CLAY WITH SAND (CL), with organics, fine to medium grained, low to medium plasticity, brown to red brown										18.0			
				10								18.9			
		11.0	1724+/-												
		Test Pit Terminated at 11 Feet													

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Case 580 Super M Equipped with 24 inch wide bucket.

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Test Pit Started: 06-02-2022 | Test Pit Completed: 06-02-2022

Excavator: Backhoe | Operator: Ron Tilford Backhoe

Project No.: NB225050

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

TEST PIT LOG NO. TP-3

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

LOCATION See Exploration Plan

Latitude: 38.7116° Longitude: -120.8373°

Approximate Surface Elev.: 1736 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DEPTH (Ft.)	WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES
		0.3	1735.7+/-												
			TOPSOIL, approximately 4 inches in thickness												
2			**SILTY SAND (SM)**, trace gravel, fine to medium grained, subangular, light brown, moderate cementation, gravel is approximately 1 to 3 inches in dimension							4.5 (HP)		8.2			
				5						4.5 (HP)		13.5			
		7.0	1729+/-												
3			**CLAYEY SAND (SC)**, trace gravel, fine to medium grained, subangular, low plasticity, orange brown, gravel is approximately 1 to 2 inches in dimension									14.7			
		9.0	1727+/-												
5			**POORLY GRADED SAND (SP)**, with organics, fine grained, subrounded, gray	10								13.2			
		11.0	1725+/-												
			Test Pit Terminated at 11 Feet												

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Case 580 Super M Equipped with 24 inch wide bucket.

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Test Pit Started: 06-02-2022	Test Pit Completed: 06-02-2022
Excavator: Backhoe	Operator: Ron Tilford Backhoe
Project No.: NB225050	

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

TEST PIT LOG NO. TP-4

PROJECT: Perks Court Facility

CLIENT: RPM Team LLC
Salinas, CA

SITE: 6880 Perks Ct
Placerville, CA

LOCATION See Exploration Plan

Latitude: 38.7115° Longitude: -120.8374°

Approximate Surface Elev.: 1741 (Ft.) +/-

MODEL LAYER	GRAPHIC LOG	DEPTH	ELEVATION (Ft.)	DESCRIPTION
		0.3	1740.7+/-	**TOPSOIL**, approximately 4 inches in thickness
2				**SILTY SAND (SM)**, trace gravel, fine to medium grained, subangular, light brown, gravel is approximately 1 to 3 inches in dimension
		5.0	1736+/-	
5				**POORLY GRADED SAND (SP)**, with organics, fine grained, gray
		12.0	1729+/-	
4		13.0	1728+/-	**LEAN CLAY WITH SAND (CL)**, fine grained, low plasticity, red brown
				Test Pit Terminated at 13 Feet

DEPTH (Ft.): 5, 10

WATER LEVEL OBSERVATIONS	SAMPLE TYPE	FIELD TEST RESULTS	RQD (%)	UCC ROCK (psi)	LABORATORY HP (tsf)	UNCONFINED COMPRESSIVE STRENGTH (tsf)	WATER CONTENT (%)	DRY UNIT WEIGHT (pcf)	ATTERBERG LIMITS LL-PL-PI	PERCENT FINES

Stratification lines are approximate. In-situ, the transition may be gradual.

Hammer Type: Automatic

Advancement Method:
Case 580 Super M Equipped with 24 inch wide bucket.

Abandonment Method:
Boring backfilled with soil cuttings upon completion.

See Exploration and Testing Procedures for a description of field and laboratory procedures used and additional data (If any).

See Supporting Information for explanation of symbols and abbreviations.

Notes:

WATER LEVEL OBSERVATIONS

Groundwater not encountered

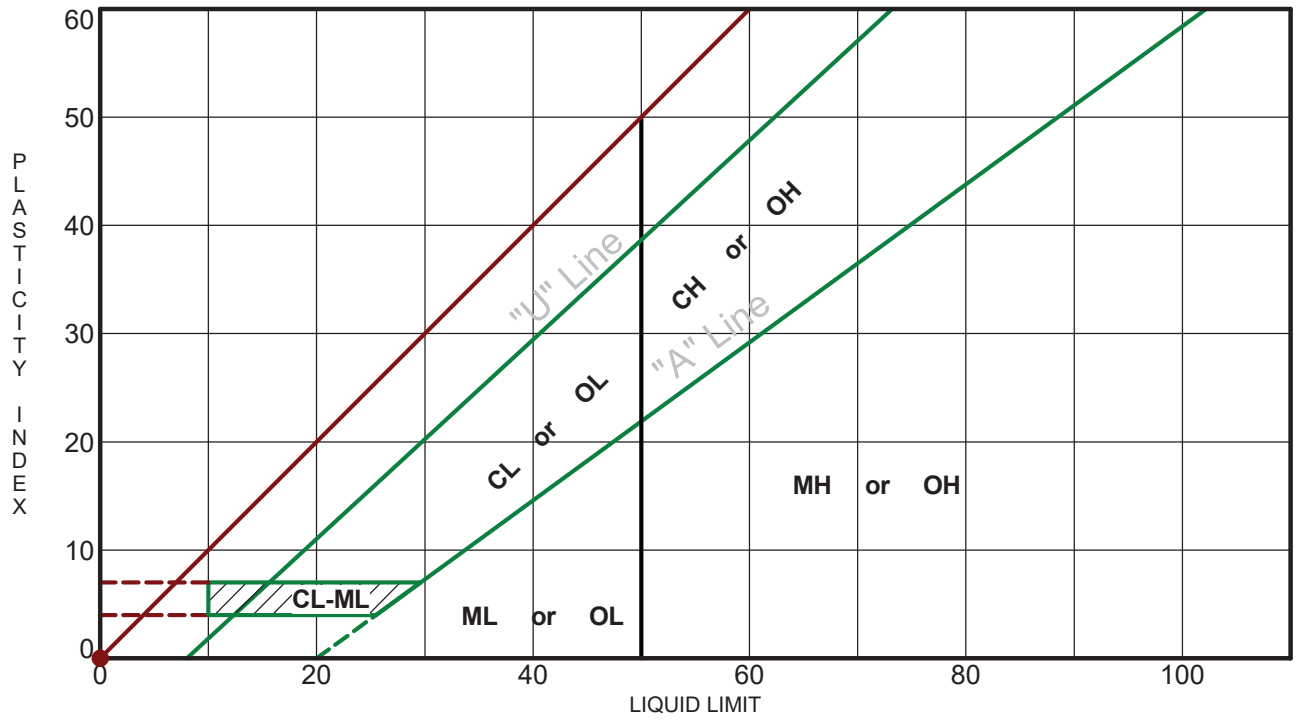
Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

Test Pit Started: 06-02-2022	Test Pit Completed: 06-02-2022
Excavator: Backhoe	Operator: Ron Tilford Backhoe
Project No.: NB225050	

THIS BORING LOG IS NOT VALID IF SEPARATED FROM ORIGINAL REPORT. GEO SMART LOG-NO WELL NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 7/8/22

ATTERBERG LIMITS RESULTS

ASTM D4318



Boring ID	Depth (Ft)	LL	PL	PI	Fines	USCS	Description
B-4	2.5 - 4	NP	NP	NP	20.5	SM	SILTY SAND

PROJECT: Perks Court Facility

PROJECT NUMBER: NB225050

SITE: 6880 Perks Ct
Placerville, CA

CLIENT: G&G Builders, Inc.
Salinas, CA

Terracon
50 Golden Land Ct Ste 100
Sacramento, CA

#6775
Exhibit A

LABORATORY TESTS ARE NOT VALID IF SEPARATED FROM ORIGINAL REPORT. ATTERBERG LIMITS NB225050 PERKS COURT FACIL.GPJ TERRACON_DATATEMPLATE.GDT 6/24/22

Expansion Index of Soils

ASTM D 4829-21

JOB NUMBER	NB225050	**DATE RECEIVED**	6/3/2022
JOB NAME	Perks Court Facility	**DATE TESTED**	6/14/2022
SAMPLE ID	B4-BULK	**TECHNICIAN**	S. Claar
SAMPLE INFO	1.0'-4.0'	**PROJECT MANAGER**	E. Smith

As Rec'd Moisture Specimen	
Tare #	SE
Tare Wt. (gms)	209.16
Tare + Wet Soil (gms)	606.22
Tare + Dry Soil (gms)	587.88
% Moisture	4.8

Expansion Index Sample Moisture Adjustment	
Original Sample Wt. Wet (gms)	1000
Original Sample Wt. Dry (gms)	953.8
Final Sample Wt. Wet (gms)	1030
Test Sample % Moisture	8.0

Expansion Index Sample Test Data	
Specimen Height (in)	1.00
Exp. Ring Wt. (gms)	367.6
Ring + Specimen (gms)	791.2
Wet Density of Specimen (lbs/cf)	128.5
Dry Density of Specimen (lbs/cf)	119.0
% Saturation	52.1

Potential Expansion Based on EI	
Expansion Index	**Potential Exp.**
0-20	**Very Low**
21-50	**Low**
51-90	**Medium**
91-130	**High**
>130	**Very High**

Instructions for Running Test

1. Assemble the device with the load on top, then set-up and zero the deformation indicator. Record initial deformation reading.

2. Allow to compress under the load for 10 minutes.

3. Immediately inundate specimen with distilled water.

4. Begin taking deformation readings in accordance with the time schedule for a period of 24 hours or until rate of expansion becomes less than 0.0002 in/hr (readings must be taken for a

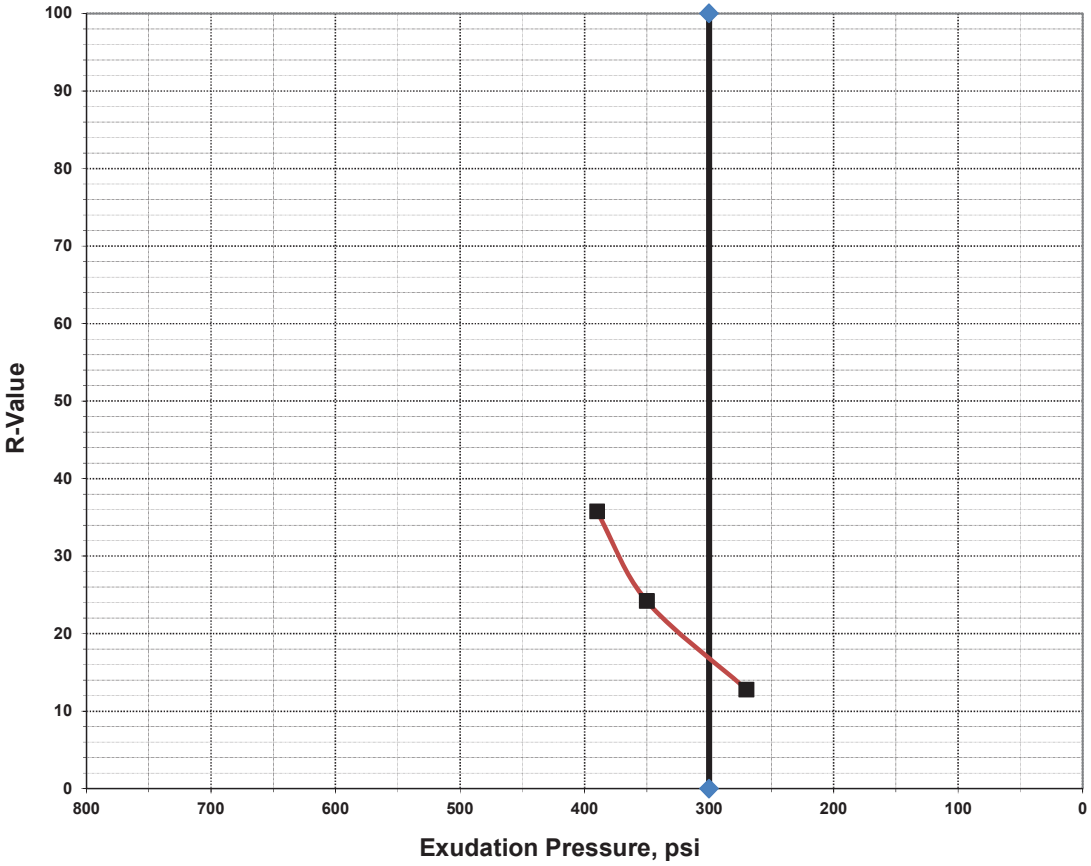
Expansion Test Data

Reading #	Time	Date	Dial Reading (in)	Δ In Height (in)
Initial [1.]	7:30:00 AM	6/14/2022	0	
10 min rest [2.]	7:40:00 AM	6/14/2022	-0.0001	
Add Water [3.]	-	-	-	-
Start [4.]	7:40:00 AM	6/14/2022	-	-
6 sec	7:40:06 AM	6/14/2022	-0.0001	
15 sec	7:40:15 AM	6/14/2022	-0.0001	
30 sec	7:40:30 AM	6/14/2022	-0.0001	
1 min	7:41:00 AM	6/14/2022	-0.0001	
2 min	7:42:00 AM	6/14/2022	-0.0001	
4 min	7:44:00 AM	6/14/2022	0.0001	0.0002
8 min	7:48:00 AM	6/14/2022	0.0010	0.0009
15 min	7:55:00 AM	6/14/2022	0.0020	0.0010
30 min	8:10:00 AM	6/14/2022	0.0037	0.0017
I hr	8:40:00 AM	6/14/2022	0.0058	0.0021
2 hr	9:40:00 AM	6/14/2022	0.0066	0.0008
4 hr	11:40:00 AM	6/14/2022	0.0069	0.0003
8 hr	3:40:00 PM	6/14/2022	0.0072	0.0003
24 hr	7:30:00 AM	6/15/2022	0.0073	0.0073

Post Expansion Moisture	
Tare #	LL
Tare Wt. (gms)	124.01
Exp. Ring Wt. (gms)	367.6
Tare + Exp. Ring + Wet Soil (gms)	947.6
Tare + Exp. Ring + Dry Soil (gms)	880.92
% Moisture	17.1

Expansion Index	**7**
Exp Ind. Corrected	**8**

Terracon



Specimen Identification	Compaction Pressure (psi)	R-Value at 300 psi
B5 @ 1-4'	**196.7**	**17**

R-Value Test

Client:	RPM Team LLC
Project:	Perks Court Facility
Site:	6880 Perks Ct, Placerville, CA 95667
Project No.:	NB225050

CHEMICAL LABORATORY TEST REPORT

Project Number: NB225050
Service Date: 06/09/22
Report Date: 06/13/22

Terracon
10400 State Highway 191
Midland, Texas 79707
432-684-9600

Client

RPM Team LLC
6724 Langley Canyon Road
Salinas, CA 93907

Project

Perks Court Facility
6880 Perks Ct
Placerville, CA

Sample Location	B-1
Sample Depth (ft.)	2.5
pH Analysis, ASTM - G51-18	7.6
Water Soluble Sulfate (SO4), ASTM C 1580 (%)	< 0.01
Sulfides, ASTM - D4658-15, (mg/kg)	nil
Chlorides, ASTM D 512 , (%)	< 0.01
RedOx, ASTM D-1498, (mV)	+407
Total Salts, ASTM D1125-14, (mg/kg)	416
Resistivity, ASTM G187, (ohm-cm)	6,711

Analyzed By: Zach Robertson

Zach Robertson
Engineering Technician III

The tests were performed in general accordance with applicable ASTM, AASHTO, or DOT test methods. This report is exclusively for the use of the client indicated above and shall not be reproduced except in full without the written consent of our company. Test results transmitted herein are only applicable to the actual samples tested at the location(s) referenced and are not necessarily indicative of the properties of other apparently similar or identical materials.

SUPPORTING INFORMATION

Contents:

Note: All attachments are one page unless noted above.

GENERAL NOTES

DESCRIPTION OF SYMBOLS AND ABBREVIATIONS
Perks Court Facility ■ Placerville, CA
Terracon Project No. NB225050

Terracon GeoReport

SAMPLING	WATER LEVEL	FIELD TESTS
Modified California Ring Sampler Rock Core Grab Sample Standard Penetration Test	Water Initially Encountered Water Level After a Specified Period of Time Water Level After a Specified Period of Time Cave In Encountered Water levels indicated on the soil boring logs are the levels measured in the borehole at the times indicated. Groundwater level variations will occur over time. In low permeability soils, accurate determination of groundwater levels is not possible with short term water level observations.	N Standard Penetration Test Resistance (Blows/Ft.) (HP) Hand Penetrometer (T) Torvane (DCP) Dynamic Cone Penetrometer UC Unconfined Compressive Strength (PID) Photo-Ionization Detector (OVA) Organic Vapor Analyzer

DESCRIPTIVE SOIL CLASSIFICATION

Soil classification as noted on the soil boring logs is based Unified Soil Classification System. Where sufficient laboratory data exist to classify the soils consistent with ASTM D2487 "Classification of Soils for Engineering Purposes" this procedure is used. ASTM D2488 "Description and Identification of Soils (Visual-Manual Procedure)" is also used to classify the soils, particularly where insufficient laboratory data exist to classify the soils in accordance with ASTM D2487. In addition to USCS classification, coarse grained soils are classified on the basis of their in-place relative density, and fine-grained soils are classified on the basis of their consistency. See "Strength Terms" table below for details. The ASTM standards noted above are for reference to methodology in general. In some cases, variations to methods are applied as a result of local practice or professional judgment.

LOCATION AND ELEVATION NOTES

Exploration point locations as shown on the Exploration Plan and as noted on the soil boring logs in the form of Latitude and Longitude are approximate. See Exploration and Testing Procedures in the report for the methods used to locate the exploration points for this project. Surface elevation data annotated with +/- indicates that no actual topographical survey was conducted to confirm the surface elevation. Instead, the surface elevation was approximately determined from topographic maps of the area.

STRENGTH TERMS

RELATIVE DENSITY OF COARSE-GRAINED SOILS (More than 50% retained on No. 200 sieve.) Density determined by Standard Penetration Resistance			CONSISTENCY OF FINE-GRAINED SOILS (50% or more passing the No. 200 sieve.) Consistency determined by laboratory shear strength testing, field visual-manual procedures or standard penetration resistance			
Descriptive Term (Density)	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**	**Descriptive Term (Consistency)**	**Unconfined Compressive Strength Qu, (tsf)**	**Standard Penetration or N-Value Blows/Ft.**	**Ring Sampler Blows/Ft.**
Very Loose	0 - 3	0 - 5	Very Soft	less than 0.25	0 - 1	< 3
Loose	4 - 9	6 - 14	Soft	0.25 to 0.50	2 - 4	3 - 5
Medium Dense	10 - 29	15 - 46	Medium Stiff	0.50 to 1.00	4 - 8	6 - 10
Dense	30 - 50	47 - 79	Stiff	1.00 to 2.00	8 - 15	11 - 18
Very Dense	> 50	≥ 80	Very Stiff	2.00 to 4.00	15 - 30	19 - 36
			Hard	> 4.00	> 30	> 36

RELEVANCE OF SOIL BORING LOG

The soil boring logs contained within this document are intended for application to the project as described in this document. Use of these soil boring logs for any other purpose may not be appropriate.

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests [A]					Soil Classification	
					Group Symbol	Group Name [B]
Coarse-Grained Soils: More than 50% retained on No. 200 sieve	**Gravels:** More than 50% of coarse fraction retained on No. 4 sieve	**Clean Gravels:** Less than 5% fines [C]	$Cu \geq 4$ and $1 \leq Cc \leq 3$ [E]		GW	Well-graded gravel [F]
			$Cu < 4$ and/or [Cc<1 or Cc>3.0] [E]		GP	Poorly graded gravel [F]
		Gravels with Fines: More than 12% fines [C]	Fines classify as ML or MH		GM	Silty gravel [F, G, H]
			Fines classify as CL or CH		GC	Clayey gravel [F, G, H]
	Sands: 50% or more of coarse fraction passes No. 4 sieve	**Clean Sands:** Less than 5% fines [D]	$Cu \geq 6$ and $1 \leq Cc \leq 3$ [E]		SW	Well-graded sand [I]
			$Cu < 6$ and/or [Cc<1 or Cc>3.0] [E]		SP	Poorly graded sand [I]
		Sands with Fines: More than 12% fines [D]	Fines classify as ML or MH		SM	Silty sand [G, H, I]
			Fines classify as CL or CH		SC	Clayey sand [G, H, I]
Fine-Grained Soils: 50% or more passes the No. 200 sieve	**Silts and Clays:** Liquid limit less than 50	**Inorganic:**	PI > 7 and plots on or above "A"		CL	Lean clay [K, L, M]
			PI < 4 or plots below "A" line [J]		ML	Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OL	Organic clay [K, L, M, N]
			Liquid limit - not dried			Organic silt [K, L, M, O]
	Silts and Clays: Liquid limit 50 or more	**Inorganic:**	PI plots on or above "A" line		CH	Fat clay [K, L, M]
			PI plots below "A" line		MH	Elastic Silt [K, L, M]
		Organic:	Liquid limit - oven dried	< 0.75	OH	Organic clay [K, L, M, P]
			Liquid limit - not dried			Organic silt [K, L, M, Q]
Highly organic soils:	Primarily organic matter, dark in color, and organic odor				PT	Peat

[A] Based on the material passing the 3-inch (75-mm) sieve.

[B] If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C] Gravels with 5 to 12% fines require dual symbols: GW-GM well-graded gravel with silt, GW-GC well-graded gravel with clay, GP-GM poorly graded gravel with silt, GP-GC poorly graded gravel with clay.

[D] Sands with 5 to 12% fines require dual symbols: SW-SM well-graded sand with silt, SW-SC well-graded sand with clay, SP-SM poorly graded sand with silt, SP-SC poorly graded sand with clay.

[E] $Cu = D_{60}/D_{10}$ $\quad Cc = \dfrac{(D_{30})^2}{D_{10} \times D_{60}}$

[F] If soil contains ≥ 15% sand, add "with sand" to group name.

[G] If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H] If fines are organic, add "with organic fines" to group name.

[I] If soil contains ≥ 15% gravel, add "with gravel" to group name.

[J] If Atterberg limits plot in shaded area, soil is a CL-ML, silty clay.

[K] If soil contains 15 to 29% plus No. 200, add "with sand" or "with gravel," whichever is predominant.

[L] If soil contains ≥ 30% plus No. 200 predominantly sand, add "sandy" to group name.

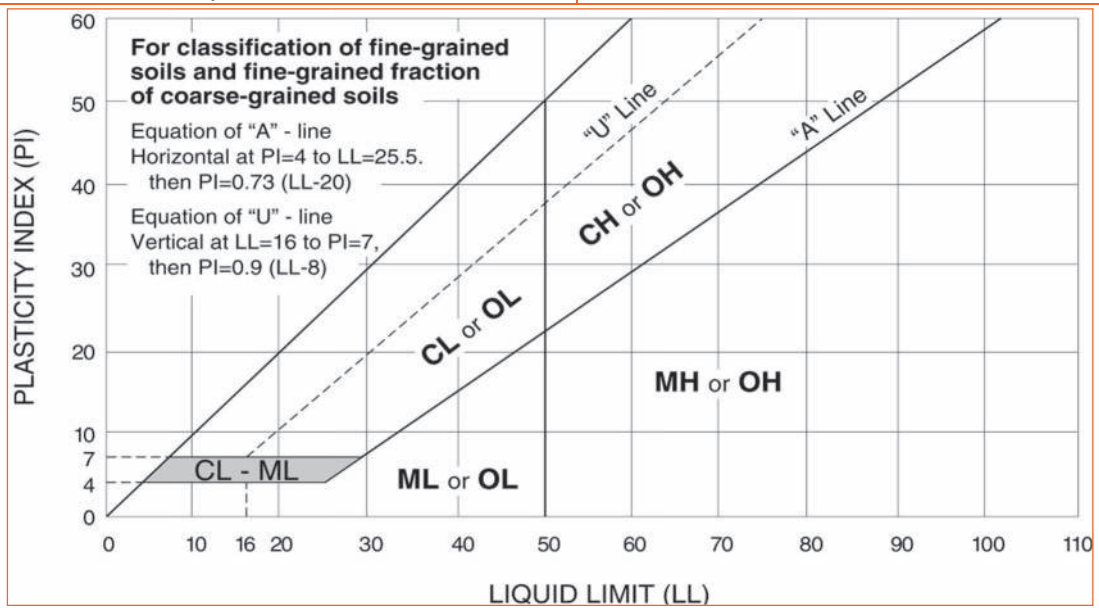
[M] If soil contains ≥ 30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N] PI ≥ 4 and plots on or above "A" line.

[O] PI < 4 or plots below "A" line.

[P] PI plots on or above "A" line.

[Q] PI plots below "A" line.



WEATHERING	
Term	**Description**
Unweathered	No visible sign of rock material weathering, perhaps slight discoloration on major discontinuity surfaces.
Slightly weathered	Discoloration indicates weathering of rock material and discontinuity surfaces. All the rock material may be discolored by weathering and may be somewhat weaker externally than in its fresh condition.
Moderately weathered	Less than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a continuous framework or as corestones.
Highly weathered	More than half of the rock material is decomposed and/or disintegrated to a soil. Fresh or discolored rock is present either as a discontinuous framework or as corestones.
Completely weathered	All rock material is decomposed and/or disintegrated to soil. The original mass structure is still largely intact.
Residual soil	All rock material is converted to soil. The mass structure and material fabric are destroyed. There is a large change in volume, but the soil has not been significantly transported.

STRENGTH OR HARDNESS		
Description	**Field Identification**	**Uniaxial Compressive Strength, psi (MPa)**
Extremely weak	Indented by thumbnail	40-150 (0.3-1)
Very weak	Crumbles under firm blows with point of geological hammer, can be peeled by a pocket knife	150-700 (1-5)
Weak rock	Can be peeled by a pocket knife with difficulty, shallow indentations made by firm blow with point of geological hammer	700-4,000 (5-30)
Medium strong	Cannot be scraped or peeled with a pocket knife, specimen can be fractured with single firm blow of geological hammer	4,000-7,000 (30-50)
Strong rock	Specimen requires more than one blow of geological hammer to fracture it	7,000-15,000 (50-100)
Very strong	Specimen requires many blows of geological hammer to fracture it	15,000-36,000 (100-250)
Extremely strong	Specimen can only be chipped with geological hammer	>36,000 (>250)

DISCONTINUITY DESCRIPTION			
Fracture Spacing (Joints, Faults, Other Fractures)		**Bedding Spacing (May Include Foliation or Banding)**	
Description	**Spacing**	**Description**	**Spacing**
Extremely close	< ¾ in (<19 mm)	**Laminated**	< ½ in (<12 mm)
Very close	¾ in – 2-1/2 in (19 - 60 mm)	**Very thin**	½ in – 2 in (12 – 50 mm)
Close	2-1/2 in – 8 in (60 – 200 mm)	**Thin**	2 in – 1 ft. (50 – 300 mm)
Moderate	8 in – 2 ft. (200 – 600 mm)	**Medium**	1 ft. – 3 ft. (300 – 900 mm)
Wide	2 ft. – 6 ft. (600 mm – 2.0 m)	**Thick**	3 ft. – 10 ft. (900 mm – 3 m)
Very Wide	6 ft. – 20 ft. (2.0 – 6 m)	**Massive**	> 10 ft. (3 m)

Discontinuity Orientation (Angle): Measure the angle of discontinuity relative to a plane perpendicular to the longitudinal axis of the core. (For most cases, the core axis is vertical; therefore, the plane perpendicular to the core axis is horizontal.) For example, a horizontal bedding plane would have a 0-degree angle.

ROCK QUALITY DESIGNATION (RQD) [1]	
Description	**RQD Value (%)**
Very Poor	0 - 25
Poor	25 – 50
Fair	50 – 75
Good	75 – 90
Excellent	90 - 100

1. The combined length of all sound and intact core segments equal to or greater than 4 inches in length, expressed as a percentage of the total core run length.

Reference: U.S. Department of Transportation, Federal Highway Administration, Publication No FHWA-NHI-10-034, December 2009 Technical Manual for Design and Construction of Road Tunnels – Civil Elements

WEATHERING	
Fresh	Rock fresh, crystals bright, few joints may show slight staining. Rock rings under hammer if crystalline.
Very slight	Rock generally fresh, joints stained, some joints may show thin clay coatings, crystals in broken face show bright. Rock rings under hammer if crystalline.
Slight	Rock generally fresh, joints stained, and discoloration extends into rock up to 1 in. Joints may contain clay. In granitoid rocks some occasional feldspar crystals are dull and discolored. Crystalline rocks ring under hammer.
Moderate	Significant portions of rock show discoloration and weathering effects. In granitoid rocks, most feldspars are dull and discolored; some show clayey. Rock has dull sound under hammer and shows significant loss of strength as compared with fresh rock.
Moderately severe	All rock except quartz discolored or stained. In granitoid rocks, all feldspars dull and discolored and majority show kaolinization. Rock shows severe loss of strength and can be excavated with geologist's pick.
Severe	All rock except quartz discolored or stained. Rock "fabric" clear and evident, but reduced in strength to strong soil. In granitoid rocks, all feldspars kaolinized to some extent. Some fragments of strong rock usually left.
Very severe	All rock except quartz discolored or stained. Rock "fabric" discernible, but mass effectively reduced to "soil" with only fragments of strong rock remaining.
Complete	Rock reduced to "soil". Rock "fabric" no discernible or discernible only in small, scattered locations. Quartz may be present as dikes or stringers.

HARDNESS (for engineering description of rock – not to be confused with Moh's scale for minerals)	
Very hard	Cannot be scratched with knife or sharp pick. Breaking of hand specimens requires several hard blows of geologist's pick.
Hard	Can be scratched with knife or pick only with difficulty. Hard blow of hammer required to detach hand specimen.
Moderately hard	Can be scratched with knife or pick. Gouges or grooves to ¼ in. deep can be excavated by hard blow of point of a geologist's pick. Hand specimens can be detached by moderate blow.
Medium	Can be grooved or gouged 1/16 in. deep by firm pressure on knife or pick point. Can be excavated in small chips to pieces about 1-in. maximum size by hard blows of the point of a geologist's pick.
Soft	Can be gouged or grooved readily with knife or pick point. Can be excavated in chips to pieces several inches in size by moderate blows of a pick point. Small thin pieces can be broken by finger pressure.
Very soft	Can be carved with knife. Can be excavated readily with point of pick. Pieces 1-in. or more in thickness can be broken with finger pressure. Can be scratched readily by fingernail.

Joint, Bedding, and Foliation Spacing in Rock [1]

Spacing	Joints	Bedding/Foliation
Less than 2 in.	Very close	Very thin
2 in. – 1 ft.	Close	Thin
1 ft. – 3 ft.	Moderately close	Medium
3 ft. – 10 ft.	Wide	Thick
More than 10 ft.	Very wide	Very thick

1. Spacing refers to the distance normal to the planes, of the described feature, which are parallel to each other or nearly so.

Rock Quality Designator (RQD) [1]

RQD, as a percentage	Diagnostic description
Exceeding 90	Excellent
90 – 75	Good
75 – 50	Fair
50 – 25	Poor
Less than 25	Very poor

1. RQD (given as a percentage) = length of core in pieces 4 inches and longer / length of run

Joint Openness Descriptors

Openness	Descriptor
No Visible Separation	Tight
Less than 1/32 in.	Slightly Open
1/32 to 1/8 in.	Moderately Open
1/8 to 3/8 in.	Open
3/8 in. to 0.1 ft.	Moderately Wide
Greater than 0.1 ft.	Wide

References: American Society of Civil Engineers. Manuals and Reports on Engineering Practice - No. 56. Subsurface Investigation for Design and Construction of Foundations of Buildings. New York: American Society of Civil Engineers, 1976. U.S. Department of the Interior, Bureau of Reclamation, Engineering Geology Field Manual.

SECTION 3.1

DIAMOND SPRINGS / EL DORADO FIRE PROTECTION DISTRICT
501 PLEASANT VALLEY RD DIAMOND SPRINGS CA 95619
OFFICE (530) 626-3190 ~ FAX (530) 626-3188
www.diamondfire.org

May 19, 2022

Russ Fackrell
El Dorado County Facilities Manager
3000 Fairlane Ct, Ste 1
Placerville CA 95667

Mr. Fackrell,

A couple of weeks ago we met to discuss the County owned property at Perks Ct and Missouri Flat Rd, just south of Hwy 50 as a possible site for a "Congregate Homeless Shelter" facility. You requested an overview of conditions Diamond Springs El Dorado Fire Protection District would require for a "Permanent Membrane Tent Structure" that would be approximately 4000 sq. ft. in size and accommodate up to 60 people.

As we discussed numerous conditions will be required to meet the life safety requirements for such a structure. The following criteria and considerations are from the 2019 CFC, Title 14, PRC 4291, as well as local standards and ordinances. Be advised that structures such as these that are utilized for more than 180 days a year will require a permit from the building official.

- **Fire Hydrant (s)** for this development shall be Dry Barrel Fire Hydrant (s) which conform to El Dorado Irrigation District specifications for the purpose of providing water for fire protection. The exact location of the hydrant (s) on private roads and on main county-maintained roadways shall be determined by the Fire Department.

- **Fire flow** for this size structure is 1500 gallons per minute with a minimum residual pressure of 20 psi for a two-hour duration. This requirement is based on 2019 CFC Table B105.1(2).

- **Fire Sprinklers** shall be required in accordance with NFPA 13 and Fire Department requirements.

- **Fire Department Access**: Approved fire apparatus access roads and driveways shall be provided for each structure. The fire apparatus access roads and driveways shall comply with the requirements of Section 503 and Appendix D of DSP as well as State Fire Safe Regulations as stated below (but not limited to):

- All roadways shall have an unobstructed width of not less than 26 feet, exclusive of shoulders.

- Each dead-end road shall have a turnaround constructed at its terminus.

- Where maximum dead-end road lengths are exceeded, there shall be a minimum of two access roadways allowing for the safe access of emergency apparatus and civilian evacuation concurrently.

- The fire apparatus access roads and driveways shall extend to within 150 feet of all portions of each facility and all portions of the exterior of the first story of the building as measured by an approved route around the exterior of the building or facility.

- Depending on the final heights of each building, the final layout of fire apparatus access roads shall be determined and approved by the fire code official with consideration of whether a ladder truck or ground ladders would be used for firefighting operations.

- Roadways shall be designed to support the imposed load of fire apparatus weighing at least 75,000 pounds and provide all-weather driving conditions. All-weather surfaces shall be asphalt, concrete, or other approved driving surface. The project proponent shall provide engineering specifications to support design if requested by the local AHJ. All roadways shall meet El Dorado County DOT and CA Fire Code requirements. Aerial apparatus road widths will be 26'. All roads less than 30' shall be signed and denoted "No on Street Parking."

- **Roadway Grades:** The grade for all roads, streets, private lanes, and driveways shall not exceed 16%.

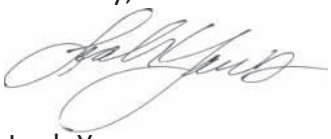
- **Traffic Calming:** This development shall be prohibited from installing any type of traffic calming device that utilizes a raised bump/dip section of the roadway. All other proposed traffic calming devices shall require approval by the fire code official.

- **Turning Radius:** The required turning radius of a fire apparatus access road/driveway shall be determined by the fire code official. Current requirements are 40' inside and 56' outside.

- **<u>Wildland Urban Interface Fire Protection Plan</u>**: This development shall be conditioned to develop, implement, and maintain a Wildland Urban Interface Fire Protection Plan per the El Dorado County Regional Fire Protection Standard. The plan must be approved by the local AHJ as well as CAL Fire.

I know that this project is of utmost importance and there is a desire to move quickly. As we discussed at the site, the location has challenges specifically to water supply, and emergency vehicle access. The roadway as it is currently, is not sufficient. It is one way in one way out. If there were to be a fire emergency the roadway is too narrow and would not accommodate evacuation traffic while emergency vehicles attempt to make access to the site. As it is difficult to condition a project without specific plans and drawings, this is a preliminary list. If you have questions, please feel free to contact me.

Sincerely,



Leah Yaws
Battalion Chief/Fire Marshal

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SECTION 3.2

June 21, 2022

El Dorado Irrigation District
2890 Mosquito Road
Placerville, CA 95667

Per the request of: David Renard, RPM

Re: Fire Flow Letter for EDC Navigation Center, Perks Ct

Dear EID:

The potable water system with the purpose of fire protection for this commercial/dormitory structure shall provide a minimum fire flow of 2,000 gallons per minute with a minimum residual pressure of 20 psi for a two-hour duration. This requirement is based on a structure up to 6200 square feet in size, Type V-B construction per CFC Appendix B, Table B105.1. The structure shall have fire sprinklers in accordance with NFPA 13 and Fire Department requirements. This fire flow rate shall be in excess of the maximum daily consumption rate for this development. A set of engineering calculations reflecting the fire flow capabilities of this system shall be supplied to the Fire Department for review and approval.

This development shall install Dry Barrel Fire Hydrants which conform to El Dorado Irrigation District specifications for the purpose of providing water for fire protection. The spacing between hydrants for this development shall not exceed 300 feet. The exact location of each hydrant shall be determined by the Fire Department.
Contact The front office at the Diamond Springs El Dorado Fire Protection District with any questions or to schedule inspections, tests (min. 2 working days in advance) at 530-626-3190. Thank you.

Sincerely,

Leah Yaws
Battalion Chief/Fire Marshal

cc: David Renard

Pacific Gas and Electric Company®

Project Type

New Business Energy Request	Retail Energy
Commodity	Electric
Application Request	New Service Connections
Request Category	Start a Project
Customer Type	Agency (City, County, Caltrans)
Facility Type	Building / Structure
Electric Request Type	Install Permanent Service
Electric Service Type	Overhead
Occupancy Type	Service Organizations

Project Information

Project Number	P000037951
Project Name	EDC Perks Court Navigation Center
Request due to a major natural disaster?	No

PROJECT ADDRESS

Street Address	6852 Perks Court
Zip Code	95667
City	PLACERVILLE
State	CA
Latitude	38.711282
Longitude	-120.837462

PROJECT DATA

Assessor Parcel Number	327-130-020
Work Description	Install Permanent Service (Electric)
This project is subject to Buy America requirements implemented by the Service Transportation Assistance Act with federal funding from:	Not Applicable

SERVICE DATA

Approximate Project Completion Date	2022-10-31
Zero Lot Line	No
Number of Electric Services	1
Total Number of Electric Meters Needed	600
Number of Buildings	2
Number of Lots / Unit	1
Number of Stories	1
Total Square Ft.	5460
Average Square Ft.	5460
Largest Square Ft.	5460
Square Ft. of Building (including all floors)	5460

Business Activity (NAICS)	624221

OPERATING TIME

What Months will this facility operate?	January, February, March, April, May, June, July, August, September, October, November, December

DESIGN AND INSTALLATION

Are you planning to use an Applicant Design contractor?	Yes
Are you planning to use an Applicant Install contractor?	Yes
Are you planning to submit a competitive bid?	No
Who will install the service wire?	PG&E

SELF GENERATION

Are you installing any self-generation equipment as part of your project?	No

Contact Information

SUBMITTER

I am authorized to submit this application on behalf of the property owner. / I am the property owner.	Yes
First Name	David
Last Name	Renard
Legal Status	Corporation
Company Name	EL DORADO COUNTY PERKS COURT NAVIGATION CENTER
Street Address	3047 Briw Road
Zip Code	95667
City	PLACERVILLE
State	CA
Day Phone	4084393283
Mobile Phone	4084393283
Email	david@rpm-team.com

PRIMARY

Primary Contact	Same As Submitter
First Name	David
Last Name	Renard
Company Name	EL DORADO COUNTY PERKS COURT NAVIGATION CENTER
Street Address	3047 Briw Road
Zip Code	95667
City	PLACERVILLE
State	CA
Day Phone	4084393283
Mobile Phone	4084393283
Email	david@rpm-team.com

CONTRACTOR

Contractor	Other
First Name	Tom
Last Name	Stavropoulos
Company Name	G&G Builders
Street Address	4542 Contractors Place
Zip Code	94551
City	LIVERMORE
State	CA
Day Phone	9258469023
Mobile Phone	5108823478
Email	tom@ggbuildersinc.com

LEGAL

Financially Responsible	Same As Contractor
First Name	Tom
Last Name	Stavropoulos
Legal Name to Appear on Contract	G&G Builders Inc.
Legal Status	Corporation
State of Inc. or LLC	CA
Street Address	4542 Contractors Place
Zip Code	94551
City	LIVERMORE
State	CA
Day Phone	9258469023
Mobile Phone	5108823478
Receive Contract and invoices electronically?	Yes
Email	tom@ggbuildersinc.com

ENERGY BILLING

Financially Responsible	Other
First Name	Charles
Last Name	Harrell
Name to appear on the bill	El Dorado County
Legal Status	Government Agency
Company Name	El Dorado County
Street Address	3047 Briw Road
Zip Code	95667
City	PLACERVILLE
State	CA
Day Phone	5306216051
Mobile Phone	5306513345
Email	charles.harrell@edcgov.us

Construction Information

GENERAL

Will any existing gas or electric PG&E facilities require relocation/removal?	No

Do existing PG&E electric overhead facilities require undergrounding?	No
Construction Start Date	2022-07-18

TEMPORARY SERVICES

Is temporary service needed (electric)?	Yes
Electric: Date Temporary Service Needed	2022-09-05
Temporary Electric Service Type	Overhead
Will temporary service address be the same as project address?	Yes
Will Temporary Service power be operated for less than one year?	Yes
Main Panel Rating of Temporary service	600 Amp
Electric Service Pole Installation	Applicant

Electric Information

PROPOSED SERVICE

Voltage Level	Primary
Phase	3-Phase
Wires	3-Wire
Voltage	12,000 Volt
Main Panel Rating (Amps)	600 Amp

ELECTRIC VEHICLE

Are you planning to install an EV Charging Station?	No

STREETLIGHTS

Are you installing or removing streetlights?	No

PROPOSED ELECTRIC LOAD

Common Usage Area (select all that apply)	Sprinklers,Area Lighting

SECTION 4.2

Tom Stavropoulos

From: NO-REPLY@YOURPROJECTS.PGE.COM
Sent: Tuesday, July 12, 2022 8:01 AM
To: david@rpm-team.com
Cc: Tom Stavropoulos
Subject: PG&E Project Status Update for Project Number P000037951 - EDC Perks Court Navigation Center

CAUTION: EXTERNAL SENDER!

This email was sent from an EXTERNAL source. Do you know this person? Are you expecting this email? Are you expecting any links or attachments? If suspicious, do not click links, open attachments, or provide credentials. Don't delete it. **Report it by using the "Report Phish" button.**

We received your application.

Congratulations! You have successfully submitted your application for 6852 PERKS COURT, EDC Perks Court Navigation Center. Your Project Number is P000037951. Please reference this Project Number in all correspondence going forward.

As your project progresses, please note PG&E will never ask for your financial information over the phone. For more information on potential scams, please visit **pge.com/scams**.

If you don't already have an online account, you can create one by visiting **yourprojects.pge.com**. If you already submitted an application either over the phone or by mail, call the PG&E Building and Renovation Service Center at **1-877-PGE-SRVC** to set up an account.

We look forward to working with you to achieve your project goals.

Thank you,

Pacific Gas & Electric Company

For more information
PG&E offers a variety of tools and online resources to guide you through your project. For getting started guides, project checklists and answers to frequently asked questions, please visit **pge.com/building** (residential) or **pge.com/newconstruction** (commercial). For a comprehensive list of the requirements and policies related to new or modified gas and electric service, please visit **pge.com/greenbook**. You may also call our Building & Renovation Service Center, 7 a.m. to 6 p.m. at 1-877-743-7782.

pge.com : **privacy** : **disclosure**

For inquiries, please do not reply to this e-mail. Submit feedback via **Contact Us**. "PG&E" refers to Pacific Gas and Electric Company, a subsidiary of PG&E Corporation. 77 Beale St. San Francisco, CA 94105. © 2017. Reference Number CE-001

SECTION 4.3


Perks Ct
Perks Ct
Perks Ct
NEW CUSTOMER POLE
NEW 400A 1PH 120/240
PANEL BOARD
75KVA DEMAND
4
70'
NEW PRIMARY POLE
NEW POLE BOLTED TRANSFORMER
3
Missouri Flat Rd
Perks Ct
200'
168'
NEW PRIMARY POLE
2
50'
EXISTING RISER POLE
60/1
1
Perks Ct
EXISTING ANCHOR
(2) 7/16
Mother Lode Dr
Google

SECTION 5.1

El Dorado Irrigation District

Letter No.: DS0622-155

June 28, 2022

VIA EMAIL

Tom Stavropoulos
G & G Builders, Inc
4542 Contractors Place
Livermore, CA 94551
Email: tom@ggbuildersinc.com

Subject: Facility Improvement Letter (FIL), EDC Perks Court Navigation Center - 3749FIL
Assessor's Parcel No. 327-130-020 (Placerville)
EDC Project No: 6586

Dear Mr. Stavropoulos:

This letter is in response to your request dated June 22, 2022 and is valid for a period of three years. If facility improvement plans for your project are not submitted to El Dorado Irrigation District (EID or District) within three years of the date of this letter, a new Facility Improvement Letter will be required.

Design drawings for your project must be in conformance with the District's *Water, Sewer and Recycled Water Design and Construction Standards*.

This proposed project is a new commercial/dormitory structure on 5.13 acres. Water service, private fire service and a fire hydrant are requested. The property is within the District boundary.

This letter is not a commitment to serve, but does address the location and approximate capacity of existing facilities that may be available to serve your project.

Water Supply
As of January 1, 2021, there were 22,258 equivalent dwelling units (EDUs) of water supply available in the Western/Eastern Water Supply Region. Your project as proposed on this date would require 3 EDUs of water supply.

Water Facilities
A 2-inch water line is located on the parcel to be developed (see enclosed System Map). The Diamond Springs/El Dorado Fire Protection District/El Dorado County Fire Protection District has determined that the minimum fire flow for this project is 1,500 GPM for a 2-hour duration

while maintaining a 20-psi residual pressure. The existing 2-inch water line does not have capacity to supply any type of fire flow. In order to provide this fire flow (1,500 GPM) and receive service, you would be required to upsize approximately 500 feet of 2-inch water line to 8-inch. The replacement would need to start near the fire hydrant that is located about 200 feet southeast of the parcel to be developed. The hydraulic grade line for the existing water distribution facilities is 1,905 feet above mean sea level at static conditions and 1,860 feet above mean sea level during fire flow and maximum day demands.

The flow predicted above was developed using a computer model and is not an actual field flow test.

Sewer Facilities
Sewer service has not been requested.

Easement Requirements
Proposed water lines and related facilities must be located within an easement accessible by conventional maintenance vehicles. When the water lines are within streets, they shall be located within the paved section of the roadway. No structures will be permitted within the easements of any existing or proposed facilities. The District must have unobstructed access to these easements at all times, and generally does not allow water facilities along lot lines.

Easements for any new District facilities constructed by this project must be granted to the District prior to District approval of water improvement plans, whether onsite or offsite. In addition, due to either nonexistent or prescriptive easements for some older facilities, any existing onsite District facilities that will remain in place after the development of this property must also have an easement granted to the District.

Environmental
The County is the lead agency for environmental review of this project per Section 15051 of the California Environmental Quality Act Guidelines (CEQA). The County's environmental document should include a review of both offsite and onsite water facilities that may be constructed by this project. You may be requested to submit a copy of the County's environmental document to the District if your project involves significant off-site facilities. If the County's environmental document does not address all water facilities and they are not exempt from environmental review, a supplemental environmental document will be required. This document would be prepared by a consultant. It could require several months to prepare and you would be responsible for its cost.

Summary
Service to this proposed development is contingent upon the following:

- The availability of uncommitted water supplies at the time service is requested;
- Approval of the County's environmental document by the District (if requested);
- Executed grant documents for all required easements;
- Approval of an extension of facilities application by the District;
- Approval of facility improvement plans by the District;
- Construction by the developer of all onsite and offsite proposed water facilities;
- Acceptance of these facilities by the District; and
- Payment of all District connection costs.

Services shall be provided in accordance with El Dorado Irrigation District Board Policies and Administrative Regulations, as amended from time-to-time. As they relate to conditions of and fees for extension of service, District Administrative Regulations will apply as of the date of a fully executed Extension of Facilities Agreement.

If you have any questions, please contact Marc Mackay at (530) 642-4135.

Sincerely,

Michael J. Brink, P.E.
Supervising Civil Engineer

MB/MM:kh

Enclosures: System Map

cc w/ System Map:

Gina Hamilton – Senior Planner
El Dorado County Development Services Department
Via email – gina.hamilton@edcgov.us

Tom Burnette – Deputy Director/Building Official
El Dorado County Building Department
Via email – tom.burnette@edcgov.us

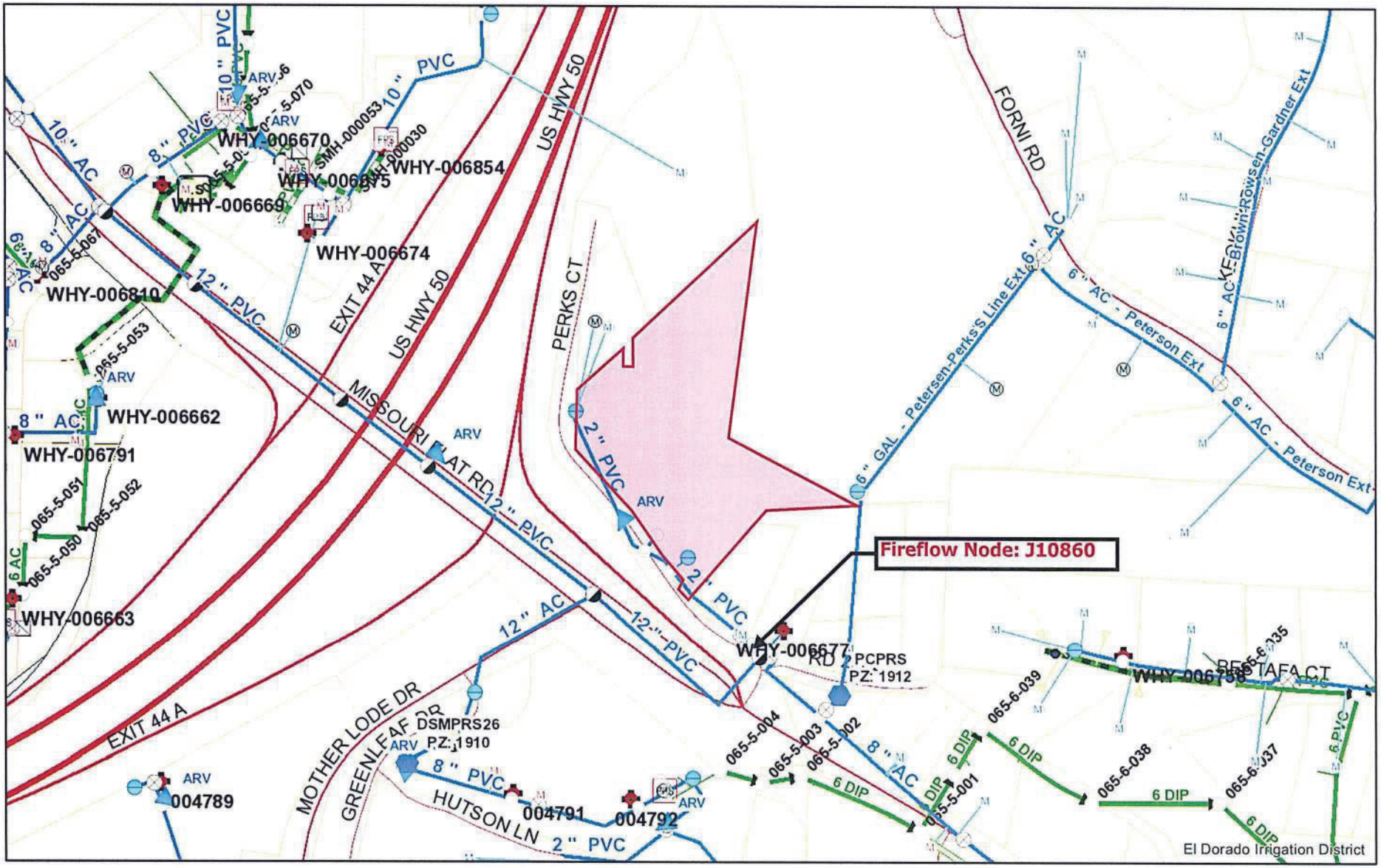
John Kahling
El Dorado County Department of Transportation
Via email – john.kahling@edcgov.us

Charles Harrell
El Dorado County Facilities Division
Via email – charles.harrell@edcgov.us

Leah Yaws – Battalion Chief / Fire Marshal
Diamond Springs / El Dorado Fire Department
Via email - lyaws@diamondfire.org

David Renard
RPM – Project Coordinador
Via email – david@rpm-team.com

EDC Perks Court Navigation Center



Date: *June 28, 2022*

Project: *EDC Perks Court Navigation Center*

APN: 327-130-020

Scale: NTS

Author:
Print date: June 28, 2022

WARNING: No accuracy of map implied until field checked by EID. Exact pipe locations must be field verified.

WATER - RESIDENTIAL/COMMERCIAL/LANDSCAPE- POTABLE ONLY

Meter Size*	EDU*	Buy-in for Treatment/ Transmission/ Storage	New Water Supply Projects	Future Capital Projects	Gabbro Soils	Line & Cover 3	Potable Only Total
0.75"	1	$4,129	$4,102	$14,391	$345	$325	**$23,292**
SFR-1" **	1	$4,129	$4,102	$14,391	$345	$325	**$23,292**
1"	2	$8,258	$8,204	$28,782	$690	$650	**$46,584**
1.5"	3	$12,387	$12,306	$43,173	$1,035	$975	**$69,876**
1.5"T	4	$16,516	$16,408	$57,564	$1,380	$1,300	**$93,168**
2"	5	$20,645	$20,510	$71,955	$1,725	$1,625	**$116,460**
3"	12	$49,548	$49,224	$172,692	$4,140	$3,900	**$279,504**
4"	21	$86,709	$86,142	$302,211	$7,245	$6,825	**$489,132**
6"	43	$177,547	$176,386	$618,813	$14,835	$13,975	**$1,001,556**
6"T	47	$194,063	$192,794	$676,377	$16,215	$15,275	**$1,094,724**

* The meter size and associated equivalent dwelling unit (EDU) are based on standards adopted by the American Water Works Association (AWWA)

** Single Family Residence with Private Fire Service- per 2009 International Residential Code (IRC). If sprinkler demand requires a meter size greater than 1-inch, the current cost for the corresponding meter size will be charged.

POTABLE WATER / RECYCLED WATER - RESIDENTIAL- DUAL PLUMBED Requires purchase of both potable and recycled meters

Meter Size*	EDU*	Buy-in for Treatment/ Transmission/ Storage	New Water Supply Projects	Future Capital Projects	Gabbro Soils	Line & Cover 3	Potable FCC Sub-Total	Recycled FCC Sub-Total	Dual Plumbed Total
0.75"	1	$3,343	$1,640	$9,778	$345	$325	$15,431	$3,919	**$19,350**
SFR-1" **	1	$3,343	$1,640	$9,778	$345	$325	$15,431	$3,919	**$19,350**
1"	2	$6,686	$3,280	$19,556	$690	$650	$30,862	$7,838	**$38,700**
1.5"	3	$10,029	$4,920	$29,334	$1,035	$975	$46,293	$11,757	**$58,050**
1.5"T	4	$13,372	$6,560	$39,112	$1,380	$1,300	$61,724	$15,676	**$77,400**
2"	5	$16,715	$8,200	$48,890	$1,725	$1,625	$77,155	$19,595	**$96,750**
3"	12	$40,116	$19,680	$117,336	$4,140	$3,900	$185,172	$47,028	**$232,200**
4"	21	$70,203	$34,440	$205,338	$7,245	$6,825	$324,051	$82,299	**$406,350**
6"	43	$143,749	$70,520	$420,454	$14,835	$13,975	$663,533	$168,517	**$832,050**
6"T	47	$157,121	$77,080	$459,566	$16,215	$15,275	$725,257	$184,193	**$909,450**

* The meter size and associated equivalent dwelling unit (EDU) are based on standards adopted by the American Water Works Association (AWWA)

** Single Family Residence with Private Fire Service- per 2009 International Residential Code (IRC). If sprinkler demand requires a meter size greater than 1-inch, the current cost for the corresponding meter size will be charged.

EL DORADO IRRIGATION DISTRICT

Facility Capacity Charges (FCCs) and Fees

Revised : 11/30/2021
Effective: January 1, 2022

RECYCLED WATER - COMMERCIAL LANDSCAPE

Meter Size*	EDU*	Fixed Assests plus Future Capital Projects	Commercial Recycled Total
0.75"	1	$3,919	**$3,919**
1"	2	$7,838	**$7,838**
1.5"	3	$11,757	**$11,757**
1.5"T	4	$15,676	**$15,676**
2"	5	$19,595	**$19,595**
3"	12	$47,028	**$47,028**
4"	21	$82,299	**$82,299**
6"	43	$168,517	**$168,517**
6"T	47	$184,193	**$184,193**

* The meter size and associated equivalent dwelling unit (EDU) are based on standards adopted by the American Water Works Association (AWWA)

RECYCLED WATER - PLAN CHECK & INSPECTION FEE:

$400.00 per lot - back yard not completed by developer
$325.00 per lot - front and back yard completed by developer

WASTEWATER - RESIDENTIAL/COMMERCIAL

Meter Size*	EDU*	Buy-in for Collection/ Pumping/ Treatment	Future Capital Projects	Wastewater Total
0.75"	1	$7,746	$8,806	**$16,552**
1"	2	$15,492	$17,612	**$33,104**
1.5"	3	$23,238	$26,418	**$49,656**
1.5"T	4	$30,984	$35,224	**$66,208**
2"	5	$38,730	$44,030	**$82,760**
3"	12	$92,952	$105,672	**$198,624**
4"	21	$162,666	$184,926	**$347,592**
6"	43	$333,078	$378,658	**$711,736**
6"T	47	$364,062	$413,882	**$777,944**

* The meter size and associated equivalent dwelling unit (EDU) are based on standards adopted by the American Water Works Association (AWWA)

WASTEWATER - PLAN CHECK & INSPECTION FEE:

$200.00 Residential Wastewater Inspection
TBD - Commercial Wastewater Inspection

EL DORADO IRRIGATION DISTRICT

Facility Capacity Charges (FCCs)

Revised : 11/30/2021
Effective: January 1, 2022

AGRICULTURAL METERED IRRIGATION (AMI)

Meter Size*	EDU*	Water Buy-in	Gabbro Soils	Line & Cover 3	AMI Total
0.75"	1	$418	$345	$325	**$1,088**
1"	2	$836	$690	$325	**$1,851**
1.5"	3	$1,254	$1,035	$325	**$2,614**
1.5"T	4	$1,672	$1,380	$325	**$3,377**
2"	5	$2,090	$1,725	$325	**$4,140**
3"	12	$5,016	$4,140	$325	**$9,481**
4"	21	$8,778	$7,245	$325	**$16,348**
6"	43	$17,974	$14,835	$325	**$33,134**
6"T	47	$19,646	$16,215	$325	**$36,186**

Refer to AR 9024 for information regarding eligibility requirements for the AMI FCC

Refer to AR 9021 for information regarding future connections to EID ditches

PRIVATE FIRE SERVICE (PFS) - Applies to a separate water service designed and designated solely for fire suppression

Meter Size*	EDU*	PFS FCC	Gabbro Soils	PFS Total
0.75"	0	$0	$0	**$0**
1"	0	$0	$0	**$0**
1.5"	0	$0	$0	**$0**
1.5"T	0	$0	$0	**$0**
2"	0	$0	$0	**$0**
3"	0	$0	$0	**$0**
4"	0	$0	$0	**$0**
6"	0	$0	$0	**$0**
6"T	0	$0	$0	**$0**
8"	0	$30,290	$0	**$30,290**
10"	0	$47,710	$0	**$47,710**

* The meter size and associated equivalent dwelling unit (EDU) are based on standards adopted by the American Water Works Association (AWWA)

** EDU ratios for meter sizes larger than 6" will be calculated based on actual water flows

PLEASE BE ADVISED THAT THE VALUE OF AN EXISTING METER IS DEPENDENT UPON THE TYPE OF SERVICE PURCHASED. PLEASE CONTACT EID DEVELOPMENT SERVICES TO VERIFY THE VALUE OF YOUR WATER METER AT SERVICES@EID.ORG OR (530) 642-4028.

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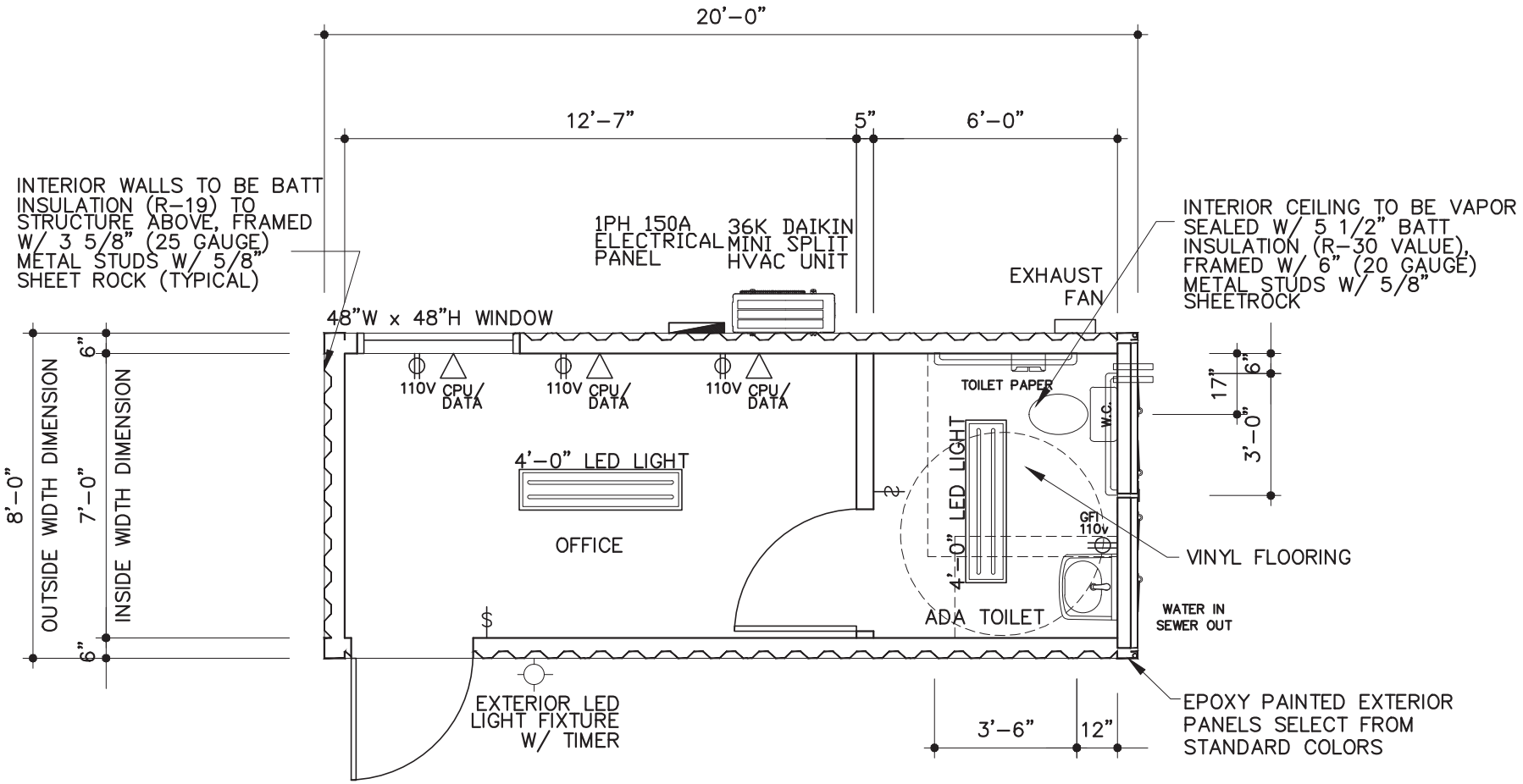
SECTION 6.1



FLOOR PLAN

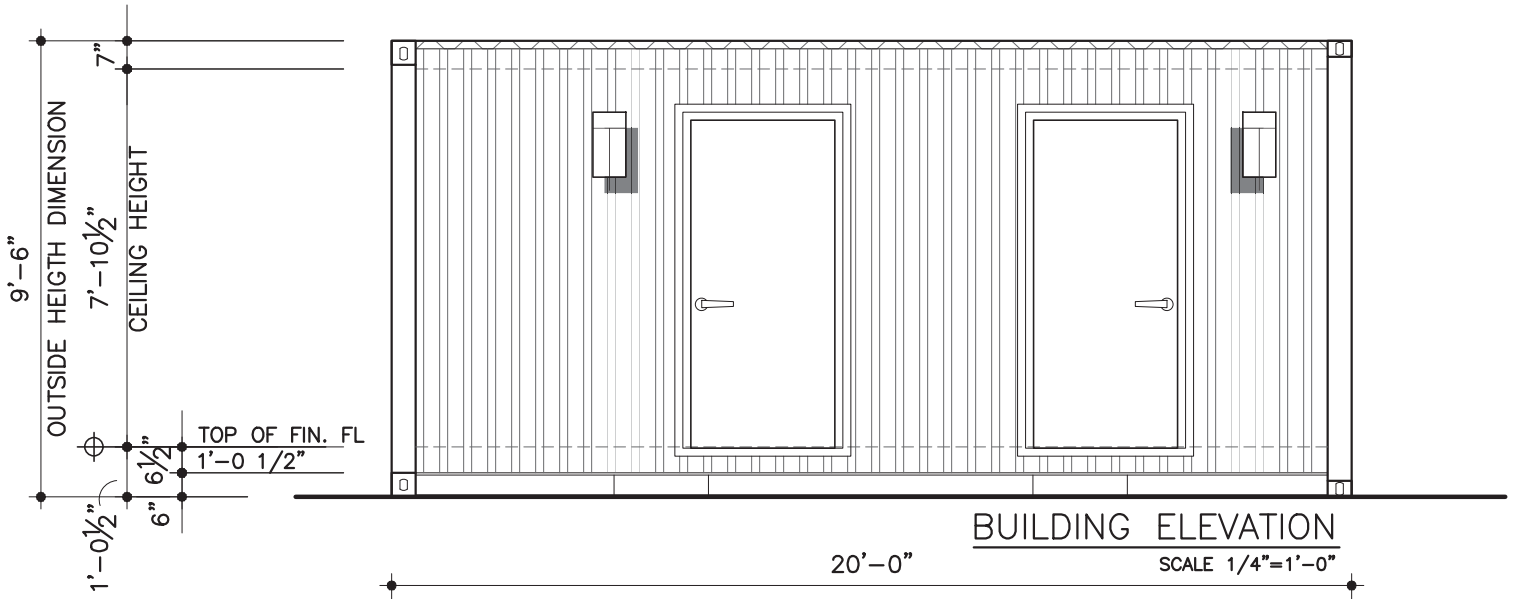
SCALE 1/4"=1'–0"

INTEGRATED MODULAR SOLUTIONS

CITY OF EL DORADO

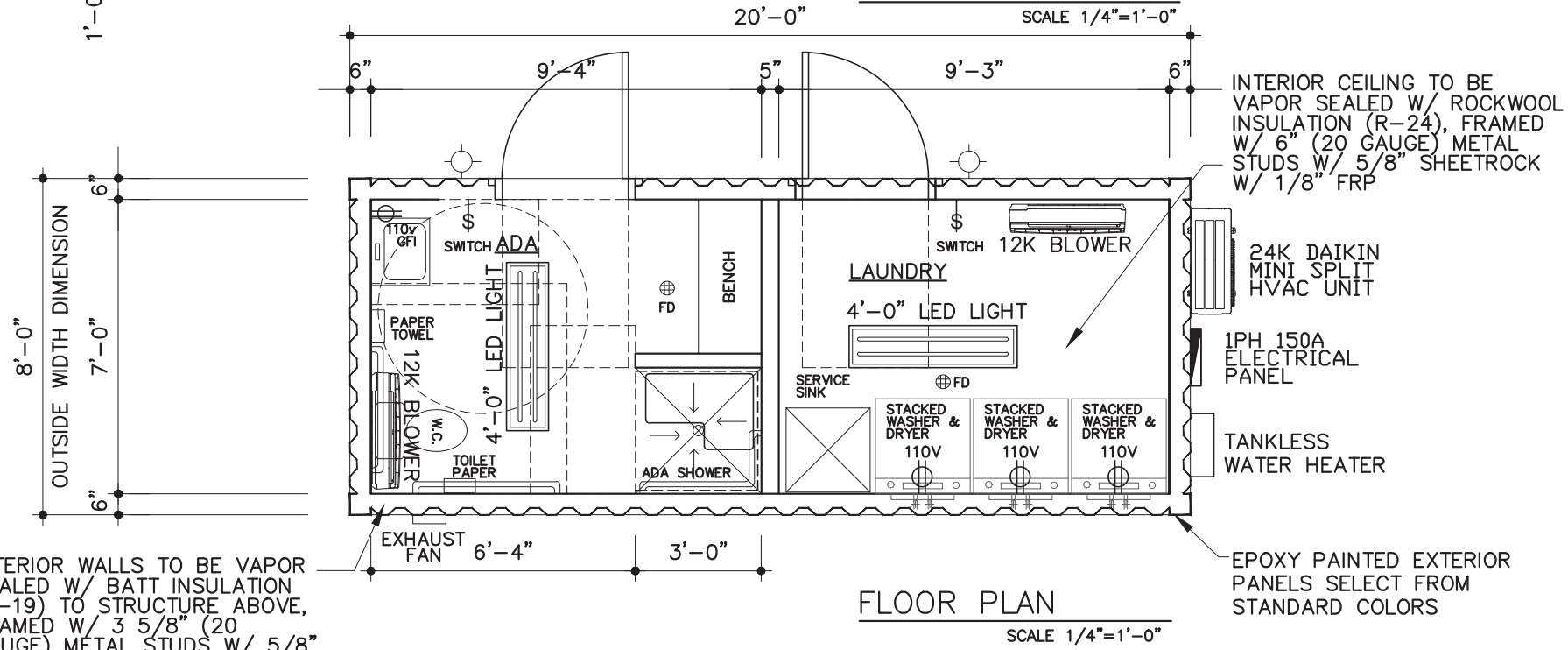
OFFICE/ ADA RESTROOM

SIZE	DATE:	APPROVAL SIGNATURE	REV
20FT H.C.	05/13/22	#6775	
SCALE: 1/4"=1'–0"	TYPE: SHIPPING CONTAINER	SHEET: Exhibit A	



BUILDING ELEVATION

SCALE 1/4"=1'-0"



FLOOR PLAN

SCALE 1/4"=1'-0"

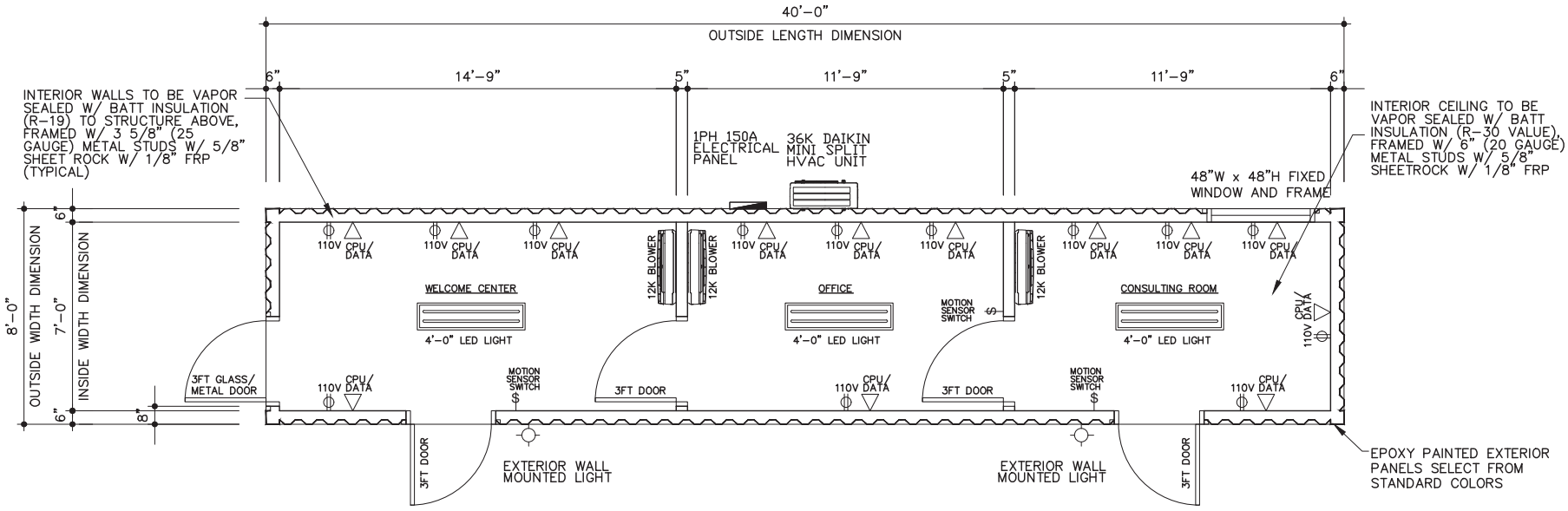
INTEGRATED MODULAR SOLUTIONS

CITY OF EL DORADO

WOMEN'S ADA RESTROOM/SHOWERS/LAUNDRY

SIZE	DATE:	APPROVAL SIGNATURE	REV
20FT H.C.	06/14/22	#6775	
SCALE: 1/4"=1'-0"	TYPE: SHIPPING CONTAINER	SHEET	

Exhibit A



FLOOR PLAN

SCALE 1/4"=1'-0"

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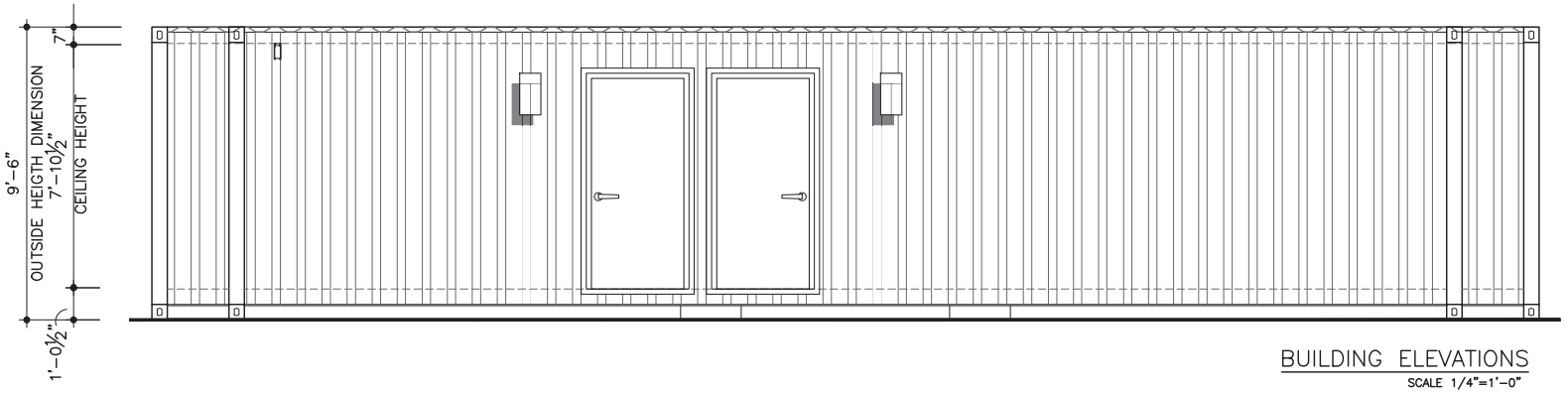
INTEGRATED MODULAR SOLUTIONS

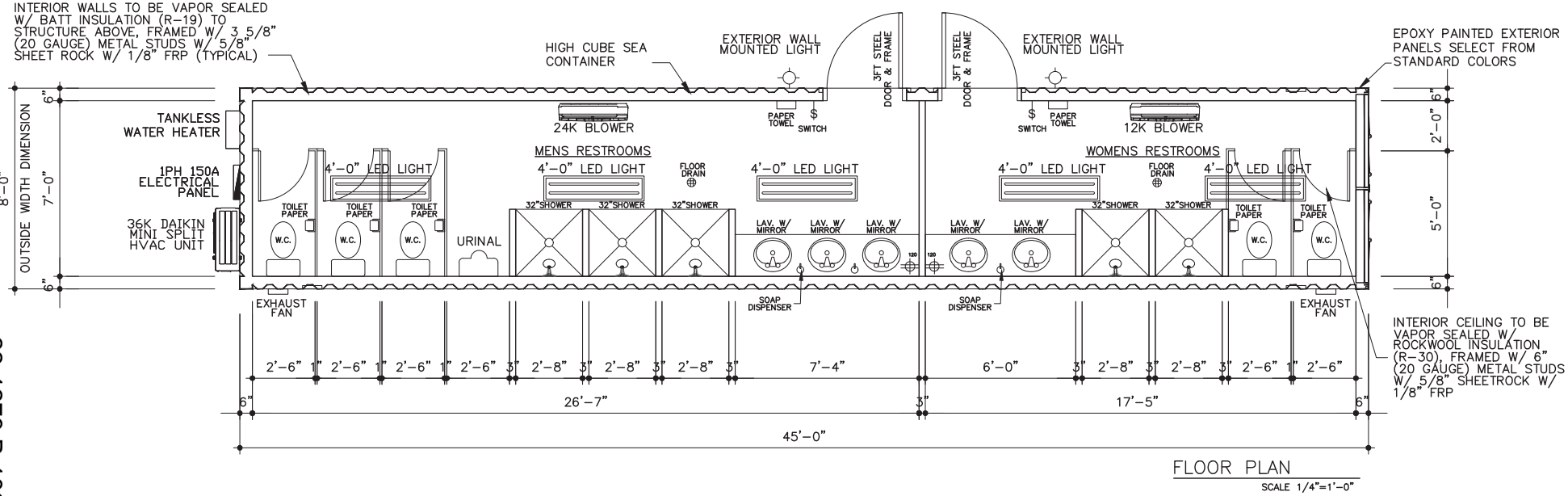
CITY OF EL DORADO

STAFF OFFICES

SIZE	DATE:	APPROVAL SIGNATURE	REV
40FT H.C.	06/14/22		
SCALE: 1/4"=1'-0"	TYPE: SHIPPING CONTAINER	SHEET: 1	#6775 Exhibit A



BUILDING ELEVATIONS
SCALE 1/4"=1'-0"



FLOOR PLAN
SCALE 1/4"=1'-0"

22-1279 B 100 of 297

INTEGRATED MODULAR SOLUTIONS

CITY OF EL DORADO

WOMEN'S AND MEN'S RESTROOMS AND SHOWERS

SIZE	DATE:	APPROVAL SIGNATURE	REV
45FT H.C.	06/14/22		
SCALE: 1/4"=1'-0"	TYPE: SHIPPING CONTAINER	SHEET: 1	#6775 Exhibit A

Product Data

WeatherMaker®
Single Packaged Rooftop

3 to 6 Nominal Tons

ecoblue™ technology

48/50FC**04, 05, 06, 07

48FC: Single-Package Gas Heating/Electric Cooling Rooftop Units
50FC: Electric Cooling Rooftop Units with Optional Electric Heat
with Puron® Refrigerant (R-410A)

© Carrier Corporation 2019

Features/Benefits

The New Carrier WeatherMaker® rooftop units (RTU) with EcoBlue™ Technology were designed by customers for customers and integrate new technology to provide value added benefits never seen in this type of equipment before.

New major design features include:

- Patent pending, industry's first efficient indoor fan system using Vane Axial fan with electric commutated variable speed motor
- Reliable fixed speed scroll compressor on 3-5 ton sizes and 2 stage scroll technology on 6 ton sizes
- Upgraded unit control board with intuitive indoor fan adjustment
- Reliable copper tube/aluminum fin condenser coil with $^{5}/_{16}$-in. tubing to help reduce refrigerant charge versus prior designs
- New outdoor fan system with rugged — lightweight high impact composite fan blade

48/50FC WeatherMaker® units up to 6 tons are specifically designed to fit on Carrier roof curbs that were installed back to 1989, which makes replacement easy and eliminates the need for curb adapters or changing utility connections.

Single-stage units deliver SEERs up to 14.0. IEERs up to 15.2. All models are capable of either vertical or horizontal airflow.

The Carrier rooftop unit (RTU) was designed by customers for customers. With "no-strip" screw collars, handled access panels, and more, the unit is easy to install, easy to maintain, and easy to use. Your new 3 to 6 ton Carrier WeatherMaker rooftop unit (RTU) provides optimum comfort and control from a packaged rooftop.

Value-added features include:

- optional Humidi-MiZer® adaptive dehumidification system for improved part load humidity performance
- Puron® refrigerant (R-410A)
- single point gas and electrical connections
- optional fully integrated SystemVu™ controls
- RTU Open controller for BACnet[1], LonWorks[2], Modbus[3] and Johnson Controls N2
- 3 to 5 ton models use fixed refrigerant metering devices and 6 ton models use a TXV
- Scroll compressors with internal line-break overload protection
- Units come with an easy access tool-less filter door. Filter track tilts out for filter removal and replacement. All filters are the same size in each unit

Installation ease

All WeatherMaker units are field-convertible to horizontal airflow, which makes it easy to adjust to unexpected job-site complications. Lighter units make for easy replace. Simple, fast plug-in connections to the standard integrated unit control board (UCB). Clearly labeled connections points to reduce installation time. Also, a large control box provides room to work and room to mount Carrier accessory controls.

Easy to maintain

With the new EcoBlue Vane Axial fan system and direct drive ECM motor, there is no longer a need to adjust belts or pulleys as in past designs. This frees up maintenance and installation time.

Easy access handles by Carrier provide quick and easy access to all normally serviced components. Our "no-strip" screw system has superior holding power and guides screws into position while preventing the screw from stripping the unit's metal.

Sloped, corrosion resistant composite drain pan sheds water; and won't rust.

Easy to use

The newly re-designed Unit Control Board by Carrier puts all connections and troubleshooting points in one convenient place. Most low voltage connections are made to the same board and make it easy to access it. Setting up the fan is simple by an intuitive switch and rotary dial arrangement. Carrier rooftops have high and low pressure switches, a filter drier, and 2-in. filters standard.

1. BACnet is a registered trademark of ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers).
2. LonWorks is a registered trademark of Echelon Corporation.
3. Modbus is a registered trademark of Schneider Electric.

Table of contents

EcoBlue™ Technology

Direct drive EcoBlue Technology indoor fan system uses Vane Axial fan design and electrically commutated motors.

This new Vane Axial design over past belt drive systems has 75% fewer moving parts, uses up to 40% less energy and has no fan belts, blower bearings and shaft.

Streamlined control and integration

Carrier controllers make connecting WeatherMaker® rooftops into existing building automation systems easy. The units are compatible with conventional thermostat controls, SystemVu™ controls and Carrier RTU Open multi-protocol controller.

Operating efficiency and flexibility

The 48/50FC rooftops meet ASHRAE (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) 90.1-2016, IECC[1] (International Energy Conservation Code) IECC-2018 minimum efficiency requirements.

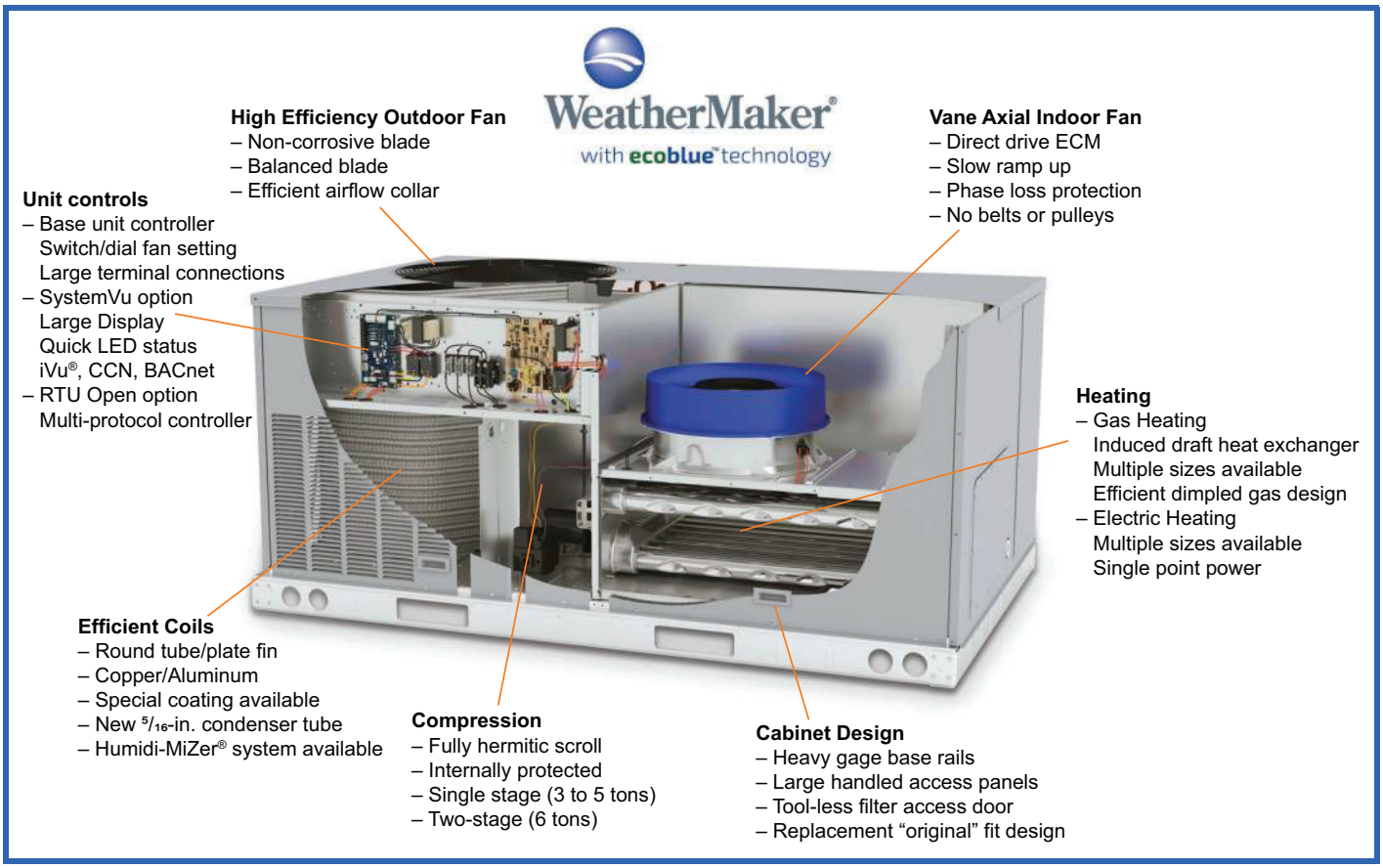
1. IECC is a registered trademark of the International Code Council, Inc.

Field convertible airflow

All WeatherMaker 3 to 6 ton units are field-convertible to horizontal airflow, which makes it easy to adjust to unexpected job-site.

Comfort control

Carrier's patented Humidi-MiZer® adaptive dehumidification system is an all-inclusive factory-installed option on gas heating/electric cooling and electric cooling/electric heat models. This system provides reliable, flexible operation to meet indoor part load sensible and latent requirements.



Model number nomenclature

48FC MODEL NUMBER NOMENCLATURE

Position:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Example:	4	8	F	C	D	A	0	4	A	2	A	5	-	0	A	0	A	0

Unit Heat Type
48 – Gas Heat Packaged Rooftop

Model Series - WeatherMaker®
FC – 14.0 SEER Standard Efficiency, sizes 04-06
15.0 IEER Standard Efficiency, size 07

Heat Size
D = Low Gas Heat
E = Medium Gas Heat
F = High Gas Heat
L = Low NOx – Low Gas Heat[1]
S = Low Heat w/ Stainless Steel Exchanger
R = Medium Heat w/ Stainless Steel Exchanger
T = High Heat w/ Stainless Steel Exchanger
(Low NOx models include Stainless Steel HX)

Refrig. Systems Options
A = Standard One Stage Cooling Models[1]
B = Standard One Stage Cooling Models with Humidi-MiZer® system[1, 3]
M = Single Circuit, Two Stage Cooling[2, 3]
N = Single Circuit, Two Stage Cooling with Humidi-MiZer system[2]

Cooling Tons
04 = 3 tons
05 = 4 tons
06 = 5 tons
07 = 6 tons

Sensor Options
A = None
B = Return Air (RA) Smoke Detector
C = Supply Air (SA) Smoke Detector
D = RA + SA Smoke Detector
E = CO_2 Sensor
F = RA Smoke Detector and CO_2 Sensor
G = SA Smoke Detector and CO_2 Sensor
H = RA + SA Smoke Detector and CO_2 Sensor
J = Condensate Overflow Switch
K = Condensate Overflow Switch and RA Smoke Detector
L = Condensate Overflow Switch and RA and SA Smoke Detectors
M = Condensate Overflow Switch and SA Smoke Detector

Indoor Fan Options
1 = Direct Drive – EcoBlue – Standard Static
2 = Direct Drive – EcoBlue – Medium Static
3 = Direct Drive – EcoBlue – High Static

Coil Options – (Outdoor - Indoor - Hail Guard)
A = Al/Cu - Al/Cu
B = Precoat Al/Cu - Al/Cu
C = E-coat Al/Cu - Al/Cu
D = E-coat Al/Cu - E-coat Al/Cu
E = Cu/Cu - Al/Cu
F = Cu/Cu - Cu/Cu
M = Al/Cu -Al/Cu — Louvered Hail Guard
N = Precoat Al/Cu - Al/Cu — Louvered Hail Guard
P = E-coat Al/Cu - Al/Cu — Louvered Hail Guard
Q = E-coat Al/Cu - E-coat Al/Cu — Louvered Hail Guard
R = Cu/Cu - Al/Cu — Louvered Hail Guard
S = Cu/Cu - Cu/Cu — Louvered Hail Guard

Voltage
1 = 575/3/60
3 = 208-230/1/60[1]
5 = 208-230/3/60
6 = 460/3/60

Design Revision
- = Factory Design Revision

Base Unit Controls
0 = Electro-mechanical Controls – can be used with field-installed W7212 EconoMi$er® IV (Non-Fault Detection and Diagnostic)
2 = RTU Open Multi-Protocol Controller
3 = SystemVu™ Controls
6 = Electro-mechanical Controls – can be used with W7220 EconoMi$er X (with Fault Detection and Diagnostic)

Intake / Exhaust Options
A = None
B = Temperature Economizer w/ Barometric Relief
F = Enthalpy Economizer w/ Barometric Relief
K = Two-Position Damper[1]
U = Temperature Ultra Low Leak Economizer w/ Barometric Relief
W = Enthalpy Ultra Low Leak Economizer w/ Barometric Relief

Service Options
0 = None
1 = Unpowered Convenience Outlet
2 = Powered Convenience Outlet
3 = Hinged Panels
4 = Hinged Panels and Unpowered Convenience Outlet
5 = Hinged Panels and Powered Convenience Outlet

Electrical Options
A = None
C = Non-Fused Disconnect
D = Thru-The-Base Connections
F = Non-Fused Disconnect and Thru-The-Base Connections

Packaging & Seismic Compliance
0 = Standard
1 = LTL

[1] Size 04/05/06 models only
[2] Size 07 models only
[3] Units with Humidi-MiZer System include Low Ambient controller

Note: On single phase (-3 voltage code) models, the following are not available as a factory-installed option:
- Humidi-MiZer System
- Two-Position Damper
- Coated Coils or Cu Fin Coils
- Louvered Hail Guards
- Economizer or 2-Position Damper
- Powered 115 Volt Convenience Outlet

50FC MODEL NUMBER NOMENCLATURE

Position:	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18
Example:	5	0	F	C	-	A	0	4	A	2	A	5	-	0	A	0	A	0

Unit Heat Type
50 – Electric Heat Packaged Rooftop

Model Series - WeatherMaker®
FC – 14.0 SEER Standard Efficiency, sizes 04-06
15.2 IEER Standard Efficiency, size 07

Heat Size
- = No heat

Refrig. Systems Options
A = Standard One Stage Cooling Models[1]
B = Standard One Stage Cooling Models with Humidi-MiZer® system[1, 3]
M = Single Circuit, Two Stage Cooling[2, 3]
N = Single Circuit, Two Stage Cooling with Humidi-MiZer system[2]

Cooling Tons
04 = 3 tons
05 = 4 tons
06 = 5 tons
07 = 6 tons

Sensor Options
A = None
B = Return Air (RA) Smoke Detector
C = Supply Air (SA) Smoke Detector
D = RA + SA Smoke Detector
E = CO_2 Sensor
F = RA Smoke Detector and CO_2 Sensor
G = SA Smoke Detector and CO_2 Sensor
H = RA + SA Smoke Detector and CO_2 Sensor
J = Condensate Overflow Switch
K = Condensate Overflow Switch and RA Smoke Detector
L = Condensate Overflow Switch and RA and SA Smoke Detectors
M = Condensate Overflow Switch and SA Smoke Detector

Indoor Fan Options
1 = Direct Drive – EcoBlue – Standard Static
2 = Direct Drive – EcoBlue – Medium Static
3 = Direct Drive – EcoBlue – High Static

Coil Options – (Outdoor - Indoor - Hail Guard)
A = Al/Cu - Al/Cu
B = Precoat Al/Cu - Al/Cu
C = E-coat Al/Cu - Al/Cu
D = E-coat Al/Cu - E-coat Al/Cu
E = Cu/Cu - Al/Cu
F = Cu/Cu - Cu/Cu
M = Al/Cu -Al/Cu — Louvered Hail Guard
N = Precoat Al/Cu - Al/Cu — Louvered Hail Guard
P = E-coat Al/Cu - Al/Cu — Louvered Hail Guard
Q = E-coat Al/Cu - E-coat Al/Cu — Louvered Hail Guard
R = Cu/Cu - Al/Cu — Louvered Hail Guard
S = Cu/Cu - Cu/Cu — Louvered Hail Guard

Voltage
1 = 575/3/60
3 = 208-230/1/60
5 = 208-230/3/60
6 = 460/3/60

Design Revision
- = Factory Design Revision

Base Unit Controls
0 = Electro-mechanical Controls – can be used with field-installed W7212 EconoMi$er® IV (Non-Fault Detection and Diagnostic)
2 = RTU Open Multi-Protocol Controller
3 = SystemVu™ Controls
6 = Electro-mechanical Controls – can be used with W7220 EconoMi$er X (with Fault Detection and Diagnostic)

Intake / Exhaust Options
A = None
B = Temperature Economizer w/ Barometric Relief
F = Enthalpy Economizer w/ Barometric Relief
K = Two-Position Damper[1]
U = Temperature Ultra Low Leak Economizer w/ Barometric Relief
W = Enthalpy Ultra Low Leak Economizer w/ Barometric Relief

Service Options
0 = None
1 = Unpowered Convenience Outlet
2 = Powered Convenience Outlet
3 = Hinged Panels
4 = Hinged Panels and Unpowered Convenience Outlet
5 = Hinged Panels and Powered Convenience Outlet

Electrical Options
A = None
C = Non-Fused Disconnect
D = Thru-The-Base Connections
F = Non-Fused Disconnect and Thru-The-Base Connections

Packaging & Seismic Compliance
0 = Standard
1 = LTL

[1] Size 04/05/06 models only
[2] Size 07 models only
[3] Units with Humidi-MiZer System include Low Ambient controller

Note: On single phase (-3 voltage code) models, the following are not available as a factory-installed option:
- Humidi-MiZer System
- Two-Position Damper
- Coated Coils or Cu Fin Coils
- Louvered Hail Guards
- Economizer or 2-Position Damper
- Powered 115 Volt Convenience Outlet

Capacity ratings

48FC AHRI RATINGS

48FC UNIT	COOLING STAGES	NOMINAL CAPACITY (TONS)	NET COOLING CAPACITY (MBH)	TOTAL POWER (kW)	SEER	EER	IEER WITH 2-SPEED INDOOR FAN MOTOR
48FC*A04	1	3	34.5	3.0	14.0	11.5	N/A
48FC*A05	1	4	47.0	4.1	14.0	11.6	N/A
48FC*A06	1	5	58.5	5.3	14.0	11.0	N/A
48FC*M07	2	6	70.0	6.4	N/A	11.0	15.0

LEGEND

AHRI — Air-Conditioning, Heating and Refrigeration Institute
EER — Energy Efficiency Ratio
IEER — Integrated Energy Efficiency Ratio
SEER — Integrated Energy Efficiency Ratio

NOTES:

1. Rated in accordance with AHRI Standards 210/240 (04-06 size) and 340/360 (07 size).
2. Rating are based on:
   Cooling Standard: 80°F (27°C) db, 67°F (19°C) wb indoor air temperature and 95°F (35°C) db outdoor air temperature.
   IEER Standard: A measure that expresses cooling part-load EER efficiency for commercial unitary air-conditioning and heat pump equipment on the basis of weighted operation at various load capacities.
3. All 48FC units comply with ASHRAE 90.1-2016 (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) and DOE-2018 (Department of Energy) Energy Standard for minimum SEER and EER requirements.
4. 48FC units comply with US Energy Policy Act (2005). To evaluate code compliance requirements, refer to state and local codes.

50FC AHRI RATINGS

50FC UNIT	COOLING STAGES	NOMINAL CAPACITY (TONS)	NET COOLING CAPACITY (MBH)	TOTAL POWER (kW)	SEER	EER	IEER WITH 2-SPEED INDOOR FAN MOTOR
50FC*A04	1	3	34.4	2.9	14.0	11.7	N/A
50FC*A05	1	4	47.0	4.0	14.0	11.8	N/A
50FC*A06	1	5	58.5	5.2	14.0	11.2	N/A
50FC*M07	2	6	70.0	6.3	N/A	11.2	15.2

LEGEND

AHRI — Air-Conditioning, Heating and Refrigeration Institute
EER — Energy Efficiency Ratio
IEER — Integrated Energy Efficiency Ratio
SEER — Integrated Energy Efficiency Ratio

NOTES:

1. Rated in accordance with AHRI Standards 210/240 (04-06 size) and 340/360 (07 size).
2. Rating are based on:
   Cooling Standard: 80°F (27°C) db, 67°F (19°C) wb indoor air temperature and 95°F (35°C) db outdoor air temperature.
   IEER Standard: A measure that expresses cooling part-load EER efficiency for commercial unitary air-conditioning and heat pump equipment on the basis of weighted operation at various load capacities.
3. All 50FC units comply with ASHRAE 90.1-2016 (American Society of Heating, Refrigerating, and Air-Conditioning Engineers) and DOE-2018 (Department of Energy) Energy Standard for minimum SEER and EER requirements.
4. 50FC units comply with US Energy Policy Act (2005). To evaluate code compliance requirements, refer to state and local codes.

SOUND RATINGS TABLE

48/50FC UNIT	COOLING STAGES	OUTDOOR SOUND (dB) AT 60 Hz								
		A-WEIGHTED	63	125	250	500	1000	2000	4000	8000
A04	1	79	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
A05	1	79	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
A06	1	79	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3
M07	2	79	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3

LEGEND

dB — Decibel

NOTES:

1. Outdoor sound data is measured in accordance with AHRI.
2. Measurements are expressed in terms of sound power. Do not compare these values to sound pressure values because sound pressure depends on specific environmental factors which normally do not match individual applications. Sound power values are independent of the environment and therefore more accurate.
3. A-weighted sound ratings filter out very high and very low frequencies, to better approximate the response of “average” human ear. A-weighted measurements for Carrier units are taken in accordance with AHRI.

Capacity ratings (cont)

MINIMUM - MAXIMUM AIRFLOW RATINGS (CFM) — NATURAL GAS AND PROPANE

UNIT	HEAT LEVEL	VOLTAGE	COOLING				HEATING*	
			MINIMUM AIRFLOW CFM	MINIMUM 2-SPEED AIRFLOW (LOW SPEED)	MINIMUM 2-SPEED AIRFLOW (HIGH SPEED)	MAXIMUM AIRFLOW CFM	MINIMUM AIRFLOW CFM	MAXIMUM AIRFLOW CFM
48FC04**	LOW	1 PHASE	900	N/A	N/A	1500	890	1950
	MED						800	1520
	HIGH						N/A	N/A
48FC05**	LOW	1 PHASE	1200	N/A	N/A	2000	890	2440
	MED						1050	2280
	HIGH						1220	2170
48FC06**	LOW	1 PHASE	1500	N/A	N/A	2500	890	3250
	MED						1050	2730
	HIGH						1220	2790
48FC04**	LOW	3 PHASE	900	N/A	N/A	1500	910	2010
	MED						960	1160
	HIGH						N/A	N/A
48FC05**	LOW	3 PHASE	1200	N/A	N/A	2000	910	2010
	MED						1250	2330
	HIGH						1390	2220
48FC06**	LOW	3 PHASE	1500	N/A	N/A	2500	910	2510
	MED						1250	2720
	HIGH						1390	2780
48FC07**	LOW	3 PHASE	1800	1200	1800	3000	910	3350
	MED						1250	3260
	HIGH						1390	3170

* Heating rating values are identical for aluminum heat exchangers and stainless steel heat exchangers.

MINIMUM - MAXIMUM AIRFLOW RATINGS (CFM) — COOLING UNITS AND ACCESSORY ELECTRIC HEAT

UNIT	COOLING				ELECTRIC HEAT*	
	MINIMUM AIRFLOW CFM	MINIMUM 2- SPEED AIRFLOW (LOW SPEED)	MINIMUM 2- SPEED AIRFLOW (HIGH SPEED)	MAXIMUM AIRFLOW CFM	MINIMUM AIRFLOW CFM	MAXIMUM AIRFLOW CFM
50FC04**	900	N/A	N/A	1500	900	1500
50FC05**	1200	N/A	N/A	2000	1200	2000
50FC06**	1500	N/A	N/A	2500	1500	2500
50FC07**	1800	1200	1800	3000	1800	3000

* Electric heat modules are available as field-installed accessories for 50FC units.

HEAT RATING TABLE — NATURAL GAS AND PROPANE

48FC UNIT		GAS HEAT	AL/SS HEAT EXCHANGER		TEMPERATURE RISE (°F)	THERMAL EFFICIENCY (%)	AFUE EFFICIENCY (%)
			INPUT/OUTPUT STAGE 1 (MBH)	INPUT/OUTPUT STAGE 2 (MBH)			
Single Phase	04	LOW	–/–	65/53	25-55	81	81
		MED	–/–	90/73	45-85	82	81
		HIGH	–/–	—	—	—	—
	05	LOW	–/–	65/53	20-55	81	81
		MED	–/–	90/73	30-65	82	81
		HIGH	–/–	130/106	45-80	81	81
	06	LOW	–/–	65/53	15-55	81	81
		MED	–/–	90/73	25-65	82	81
		HIGH	–/–	130/106	35-80	81	81
Three Phase	04	LOW	–/–	67/54	25-55	81	N/A
		MED	82/65	110/93	50-85	80	N/A
		HIGH	—	—	—	—	—
	05	LOW	–/–	67/54	25-55	81	N/A
		MED	–/–	110/88	35-65	80	N/A
		HIGH	120/96	150/120	50-80	80	N/A
	06	LOW	–/–	67/54	20-55	81	N/A
		MED	–/–	110/88	30-65	80	N/A
		HIGH	120/96	150/120	40-80	80	N/A
	07	LOW	–/–	67/54	15-55	81	N/A
		MED	–/–	110/88	25-65	80	N/A
		HIGH	120/96	150/120	30-80	80	N/A

HEAT RATING TABLE — LOW NO_X

UNIT		GAS HEAT	LOW NOx HEAT EXCHANGER		TEMP RISE (°F)	THERMAL EFFICIENCY (%)	AFUE (%)
			INPUT/OUTPUT STAGE 1 (MBH)	INPUT/OUTPUT STAGE 2 (MBH)			
SINGLE PHASE	04	LOW	—	60/49	20-50	82.0	81.3
	05	LOW	—	60/49	20-50	82.0	81.3
	06	LOW	—	60/49	15-50	82.0	81.3
THREE PHASE	04	LOW	—	60/49	20-50	82.0	81.3
	05	LOW	—	60/49	20-50	82.0	81.3
	06	LOW	—	60/49	15-50	82.0	81.3

LEGEND

AFUE — Annual Fuel Utilization Efficiency
MBH — Btuh in thousands

Physical data

48/50FC 3 TO 4 TON PHYSICAL DATA

48/50FC UNIT	48/50FC*A04	48/50FC*B04	48/50FC*A05	48/50FC*B05
NOMINAL TONS	3		4	
BASE UNIT OPERATING WT (lb) 48FC/50FC*	482/437		543/498	
REFRIGERATION SYSTEM				
No. Circuits/No. Compressors/Type	1 / 1/ Scroll			
Puron® (R-410A) charge A/B (lbs-oz)	4-6	—	9-14	—
Humidi-MiZer® Puron (R-410A) charge A/B (lbs-oz)	—	7.6	—	14-6
Metering device	Acutrol			
Humidi-MiZer metering device	—	TXV-Acutrol	—	TXV-Acutrol
High-Pressure Trip/Reset (psig)	630/505			
Low-Pressure Trip/Reset (psig)	54/117	27/44	54/117	27/44
EVAPORATOR COIL				
Material (Tube/Fin)	Cu/Al			
Coil Type	3/8-in. RTPF			
Rows/FPI	2/15		3/15	
Total Face Area (ft²)	5.5			
Condensate Drain Connection Size	3/4-in.			
CONDENSER COIL				
Material	Cu/Al			
Coil Type	5/16-in. RTPF			
Rows/FPI	1/18		2/18	
Total Face Area (ft²)	11.7		15.9	
HUMIDI-MIZER COIL				
Material	—	Cu/Al	—	Cu/Al
Coil Type	—	3/8-in. RTPF	—	3/8-in. RTPF
Rows/FPI	—	1/17	—	2/17
Total Face Area (ft²)	—	4.1	—	4.1
EVAPORATOR FAN AND MOTOR				
Standard Static 1 Phase				
Motor Qty/Drive Type	1/Direct	—	1/Direct	—
Max Cont BHP	0.44	—	0.72	—
RPM Range	189-1890	—	190-1900	—
Fan Qty/Type	1/Vane Axial	—	1/Vane Axial	—
Fan Diameter (in.)	16.6	—	16.6	—
Medium Static 1 Phase				
Motor Qty/Drive Type	1/Direct	—	1/Direct	—
Max Cont BHP	0.71	—	1.06	—
RPM Range	219-2190	—	217-2170	—
Fan Qty/Type	1/Vane Axial	—	1/Vane Axial	—
Fan Diameter (in.)	16.6	—	16.6	—
High Static 1 Phase				
Motor Qty/Drive Type	1/Direct	—	1/Direct	—
Max Cont BHP	1.07	—	1.53	—
RPM Range	249-2490	—	246-2460	—
Fan Qty/Type	1/Vane Axial	—	1/Vane Axial	—
Fan Diameter (in.)	16.6	—	16.6	—
Standard Static 3 Phase				
Motor Qty/Drive Type	1/Direct			
Max Cont BHP	0.44		0.72	
RPM Range	189-1890		190-1900	
Fan Qty/Type	1/Vane Axial			
Fan Diameter (in.)	16.6			
Medium Static 3 Phase				
Motor Qty/Drive Type	1/Direct			
Max Cont BHP	0.71		1.06	
RPM Range	219-2190		217-2170	
Fan Qty/Type	1/Vane Axial			
Fan Diameter (in.)	16.6			

48/50FC 3 TO 4 TON PHYSICAL DATA (cont)

48/50FC UNIT	48/50FC*A04	48/50FC*B04	48/50FC*A05	48/50FC*B05
High Static 3 Phase				
Motor Qty/Drive Type	1/Direct			
Max Cont BHP	1.07		1.96	
RPM Range	249-2490		266-2660	
Fan Qty/Type	1/Vane Axial			
Fan Diameter (in.)	16.6			
CONDENSER FAN AND MOTOR				
Qty / Motor Drive Type	1 / Direct			
Motor HP/RPM	1/4 / 1100	1/4 / 1100	1/4 / 1100	1/4 / 1100
Fan Diameter (in.)	23			
FILTERS				
RA Filter Qty / Size (in.)	2 / 16x25x2			
OA Inlet Screen Qty / Size (in.)	1 / 20x24x1			

* Base unit operating weight does not include weight of options.

Physical data (cont)

48/50FC 5 TO 6 TON PHYSICAL DATA

48/50FC UNIT	48/50FC*A06	48/50FC*B06	48/50FC*M07	48/50FC* N07
NOMINAL TONS	5		6	
BASE UNIT OPERATING WT (lb) 48FC/50FC*	556/511		607/562	
REFRIGERATION SYSTEM				
No. Circuits/No. Compressors/Type	1 / 1 / Scroll		1 / 1 / 2-Stage Scroll	
Puron® (R-410A) charge A/B (lbs-oz)	8-9	—	10-3	—
Humidi-MiZer® Puron (R-410A) charge A/B (lbs-oz)	—	15-0	—	20-8
Metering device	Acutrol		TXV	
Humidi-MiZer metering device	—	TXV-Acutrol	—	TXV
High-Pressure Trip/Reset (psig)	630/505			
Low-Pressure Trip/Reset (psig)	54/117	27/44	54/117	27/44
EVAPORATOR COIL				
Material (Tube/Fin)	Cu/Al			
Coil Type	3/8-in. RTPF			
Rows/FPI	4/15			
Total Face Area (ft²)	5.5		7.3	
Condensate Drain Connection Size	3/4-in.			
CONDENSER COIL				
Material	Cu/Al			
Coil Type	5/16-in. RTPF			
Rows/FPI	2/18			
Total Face Area (ft²)	15.9		15.0	
HUMIDI-MIZER COIL				
Material	—	Cu/Al	—	Cu/Al
Coil Type	—	3/8-in. RTPF	—	3/8-in. RTPF
Rows/FPI	—	2/17	—	2/17
Total Face Area (ft²)	—	4.1	—	5.5
EVAPORATOR FAN AND MOTOR				
Standard Static 1 Phase				
Motor Qty/Drive Type	1/Direct		—	
Max Cont BHP	1.06		—	
RPM Range	215-2150		—	
Fan Qty/Type	1/Vane Axial		—	
Fan Diameter (in.)	16.6		—	
Medium Static 1 Phase				
Motor Qty/Drive Type	1/Direct		—	
Max Cont BHP	1.44		—	
RPM Range	239-2390		—	
Fan Qty/Type	1/Vane Axial		—	
Fan Diameter (in.)	16.6		—	
Standard Static 3 Phase				
Motor Qty/Drive Type	1/Direct			
Max Cont BHP	1.06		1.31	
RPM Range	215-2150		230-2300	
Fan Qty/Type	1/Vane Axial			
Fan Diameter (in.)	16.6			
Medium Static 3 Phase				
Motor Qty/Drive Type	1/Direct			
Max Cont BHP	1.44		1.76	
RPM Range	239-2390		253-2530	
Fan Qty/Type	1/Vane Axial			
Fan Diameter (in.)	16.6			
High Static 3 Phase				
Motor Qty/Drive Type	1/Direct			
Max Cont BHP	2.43			
RPM Range	284-2836			
Fan Qty/Type	1/Vane Axial			
Fan Diameter (in.)	16.6			
CONDENSER FAN AND MOTOR				
Qty / Motor Drive Type	1 / Direct			
Motor HP/RPM	1/4 / 1100	1/4 / 1100	1/4 / 1100	1/4 / 1100
Fan Diameter (in.)	23			
FILTERS				
RA Filter Qty / Size (in.)	2 / 16x25x2		4 / 16x16x2	
OA Inlet Screen Qty / Size (in.)	1 / 20x24x1			

48FC 3 TO 5 TON GAS HEAT DATA — 1 PHASE UNITS

48FC UNIT	48FC**04	48FC**05	48FC**06
GAS CONNECTION			
No. of Gas Valves		1	
Natural Gas Supply Line Pressure (in. wg)/(psig)		4-13 / 0.18-0.47	
Liquid Propane Supply Line Pressure (in. wg)/(psig)		11-13 / 0.40-0.47	
HEAT ANTICIPATOR SETTING (AMPS)			
First Stage		0.14	
Second Stage		0.14	
NATURAL GAS HEAT			
LOW			
No. of Stages / No. of Burners (total)		1 / 2	
Connection Size		1/2-in. NPT	
Rollout Switch Opens / Closes (°F)		195 / 115	
Temperature Rise (°F)	25-55	20-55	15-55
MEDIUM			
No. of Stages / No. of Burners (total)		1 / 3	
Connection Size		1/2-in. NPT	
Rollout Switch Opens / Closes (°F)		195 / 115	
Temperature Rise (°F)	45-85	30-65	25-65
HIGH			
No. of Stages / No. of Burners (total)	—	1 / 3	
Connection Size	—	1/2-in. NPT	
Rollout Switch Opens / Closes (°F)	—	195 / 115	
Temperature Rise (°F)	—	45-80	35-80
LIQUID PROPANE HEAT			
LOW			
No. of Stages / No. of Burners (total)		1 / 2	
Connection Size		1/2-in. NPT	
Rollout Switch Opens / Closes (°F)		195 / 115	
Temperature Rise (°F)	25-55	20-55	15-55
MEDIUM			
No. of Stages / No. of Burners (total)		1 / 3	
Connection Size		1/2-in. NPT	
Rollout Switch Opens / Closes (°F)		195 / 115	
Temperature Rise (°F)	45-85	30-65	25-65
HIGH			
No. of Stages / No. of Burners (total)	—	1 / 3	
Connection Size	—	1/2-in. NPT	
Rollout Switch Opens / Closes (°F)	—	195 / 115	
Temperature Rise (°F)	—	45-80	35-80
LOW NOx GAS HEAT			
LOW			
No. of Stages / No. of Burners (total)		1 / 2	
Connection Size		1/2-in. NPT	
Rollout Switch Opens / Closes (°F)		195 / 115	
Temperature Rise (°F)	20-50		15-50

LEGEND

BHP — Break Horsepower
FPI — Fins Per Inch
OA — Outdoor Air
RA — Return Air

* Base unit operating weight does not include weight of options.

Physical data (cont)

48FC 3 TO 6 TON GAS HEAT DATA — 3 PHASE UNITS

48FC UNIT	48FC**04	48FC**05	48FC**06	48FC**07
GAS CONNECTION				
No. of Gas Valves	1			
Natural Gas Supply Line Pressure (in. wg)/(psig)	4-13 / 0.18-0.47			
Liquid Propane Supply Line Pressure (in. wg)/(psig)	11-13 / 0.40-0.47			
HEAT ANTICIPATOR SETTING (AMPS)				
First Stage	0.14			
Second Stage	0.14			
NATURAL GAS HEAT				
LOW				
No. of Stages / No. of Burners (total)	1 / 2			
Connection Size	1/2-in. NPT			
Rollout Switch Opens / Closes (°F)	195 / 115			
Temperature Rise (°F)	25-55		20-55	15-55
MEDIUM				
No. of Stages / No. of Burners (total)	2 / 3		1 / 3	
Connection Size	1/2-in. NPT			
Rollout Switch Opens / Closes (°F)	195 / 115			
Temperature Rise (°F)	50-85	35-65	30-65	25-65
HIGH				
No. of Stages / No. of Burners (total)	—		2/ 3	
Connection Size	—		1/2-in. NPT	
Rollout Switch Opens / Closes (°F)	—		195 / 115	
Temperature Rise (°F)	—	50-80	40-80	35-80
LIQUID PROPANE HEAT				
LOW				
No. of Stages / No. of Burners (total)	1 / 2			
Connection Size	1/2-in. NPT			
Rollout Switch Opens / Closes (°F)	195 / 115			
Temperature Rise (°F)	25-55		20-55	15-55
MEDIUM				
No. of Stages / No. of Burners (total)	2 / 3		1 / 3	
Connection Size	1/2-in. NPT			
Rollout Switch Opens / Closes (°F)	195 / 115			
Temperature Rise (°F)	50-85	35-65	30-65	25-65
HIGH				
No. of Stages / No. of Burners (total)	—		2 / 3	
Connection Size	—		1/2-in. NPT	
Rollout Switch Opens / Closes (°F)	—		195 / 115	
Temperature Rise (°F)	—	50-80	40-80	35-80
LOW NOx GAS HEAT				
LOW				
No. of Stages / No. of Burners (total)		1 / 2		—
Connection Size		1/2-in. NPT		—
Rollout Switch Opens / Closes (°F)		195 / 115		—
Temperature Rise (°F)	20-50		15-50	—

Options and accessories

ITEM	OPTION*	ACCESSORY†
GAS HEAT (48FC units only)		
Low, Medium or High Gas Heat — Aluminized Heat Exchanger	X	
Low, Medium or High Gas Heat — Stainless Steel Heat Exchanger	X	
Propane Conversion Kit		X
High Altitude Conversion Kit		X
Flue Discharge Deflector		X
Flue Shield		X
ELECTRIC HEAT (50FC units only)		
Electric Resistance Heaters		X
Single Point Kits		X
CABINET		
Thru-the-Base electrical or gas-line connections	X	X
Hinged Access Panels	X	
MERV-8 Filters	X	
COIL OPTIONS		
Cu/Cu indoor and/or outdoor coils[1]	X	
Pre-coated outdoor coils[1]	X	
Premium, E-coated outdoor coils[1]	X	
HUMIDITY CONTROL		
Humidi-MiZer® Adaptive Dehumidification System[1]	X	
CONDENSER PROTECTION		
Condenser coil hail guard (louvered deign)[1]	X	X
CONTROLS		
Thermostats, temperature sensors, and subbases		X
SystemVu™ DDC communicating controller	X	
RTU Open Multi-Protocol controller	X	
Smoke detector (supply and/or return air)	X	
Horn Strobe Annunciator[2]		X
Time Guard II compressor delay control circuit		X
Phase Monitor	X	X
Condensate Overflow switch	X	X

ITEM	OPTION*	ACCESSORY†
ECONOMIZERS AND OUTDOOR AIR DAMPERS		
EconoMi$er® IV for electro-mechanical controls - Non FDD (Standard air leak damper models)[1, 3, 9]	X	X
EconoMi$er2 for DDC controls (Standard and Ultra Low Leak air damper models)[1, 4]	X	X
EconoMi$er X for electro-mechanical controls, complies with FDD (Standard and Ultra Low Leak damper models)[1, 3, 9]	X	X
Motorized 2-position outdoor-air damper[1]	X	X
Manual outdoor-air damper (25% and 50%)		X
Barometric relief[5]	X	X
Power exhaust - prop design		X
ECONOMIZER SENSORS AND IAQ DEVICES		
Single dry bulb temperature sensors[6]	X	X
Differential dry bulb temperature sensors[6]		X
Single enthalpy sensors[6]	X	X
Differential enthalpy sensors[6]		X
CO_2 sensor (wall, duct, or unit mounted)[6]	X	X
INDOOR MOTOR AND DRIVE		
Multiple motor and drive packages	X	
LOW AMBIENT CONTROL		
Winter start kit[7]		X
Low Ambient controller to -20°F (-29°C)[7]		X
POWER OPTIONS		
Convenience outlet (powered)[1]	X	
Convenience outlet (unpowered)	X	
Non-fused disconnect[8]	X	
ROOF CURBS		
Roof curb 14-in. (356 mm)		X
Roof curb 24-in. (610 mm)		X

* Factory-installed option.

† Field-installed accessory.

NOTES:

1. Not available on single phase (-3 voltage code) models. Use field-installed accessory where available.
2. Requires a field-supplied 24V transformer for each application. See price pages for details.
3. FDD (Fault Detection and Diagnostic) capability per California Title 24 section 120.2.
4. Models with SystemVu and RTU Open DDC controls comply with California Title 24 Fault Detection and Diagnostic (FDD).
5. Included with economizer.
6. Sensors used to optimize economizer performance.
7. See application data for assistance.
8. Non-fused disconnect switch cannot be used when unit electrical rating exceeds:
   208-230/1/60 and 208-230/3/60 = 80 amps (FLA).
   480/3/60 and 575/3/60 = 80 amps (FLA).
   Carrier RTUBuilder automatically selects the amp limitations.
9. Available as a factory-installed option for 04-06 models only.

Options and accessories (cont)

Factory-installed options

Economizer (dry-bulb or enthalpy)

Economizers save money. They bring in fresh, outside air for ventilation; and provide cool, outside air to cool your building. This is the preferred method of low-ambient cooling. When coupled to CO_2 sensors, economizers can provide even more savings by coupling the ventilation air to only that amount required.

Economizers are available, installed and tested by the factory, with either enthalpy or dry-bulb temperature inputs. Additional sensors are available as accessories to optimize the economizers. Economizers include a powered exhaust system to help equalize building pressures.

Economizers include gravity controlled barometric relief that helps equalize building pressure and ambient air pressures. This can be a cost effective solution to prevent building pressurization. Economizers are available in Ultra Low Leak and standard low leak versions. Economizers can be factory-installed or easily field-installed.

Unit mounted CO_2 sensor

The CO_2 sensor works with the economizer to intake only the correct amount of outside air for ventilation. As occupants fill your building, the CO_2 sensor detects their presence through increasing CO_2 levels, and opens the economizer appropriately. When the occupants leave, the CO_2 levels decrease, and the sensor appropriately closes the economizer. This intelligent control of the ventilation air, called demand controlled ventilation (DCV), reduces the overall load on the rooftop, saving money. It is also available as a field-installed accessory.

Smoke detector (supply and/or return air)

Trust the experts. Smoke detectors make your application safer and your job easier. Carrier smoke detectors immediately shut down the rooftop unit when smoke is detected. They are available, installed by the factory, for supply air, return air, or both.

Optional Humidi-MiZer® adaptive dehumidification system

Carrier's Humidi-MiZer adaptive dehumidification system is an all-inclusive factory-installed option that can be ordered with any WeatherMaker® 48/50FC04-07 rooftop unit, with the exception of single phase voltage (208-230/1/60) units.

This system expands the envelope of operation of Carrier's WeatherMaker rooftop products to provide unprecedented flexibility to meet year round comfort conditions.

The Humidi-MiZer adaptive dehumidification system has a unique dual operational mode setting. The Humidi-MiZer system provides greater dehumidification of the occupied space by two modes of dehumidification operations in addition to its normal design cooling mode.

The WeatherMaker 48/50FC04-07 rooftop coupled with the Humidi-MiZer system is capable of operating in normal design cooling mode, sub-cooling mode, and hot gas reheat mode. Normal design cooling mode is when the unit will operate under its normal sequence of operation by cycling compressors to maintain comfort conditions. Sub-cooling mode will operate to satisfy part load type conditions when the space requires combined sensible and a higher proportion of latent load control. Hot Gas Reheat mode will operate when outdoor temperatures diminish and the need for latent capacity is required for sole humidity control Hot Gas Reheat mode will provide neutral air for maximum dehumidification operation.

NOTE: Humidi-MiZer system includes Low Ambient controller.

Thru-the-base connections

Thru-the-base connections, available as a factory option, are necessary to ensure proper connection and seal when routing wire and piping through the rooftop's basepan and curb. These couplings eliminate roof penetration and should be considered for gas lines, main power lines, as well as control power.

Hinged access panels

Allows access to unit's major components with specifically designed hinged access panels. Panels are filter, control box access indoor fan motor access.

Cu/Cu (indoor) coils

Copper fins and copper tubes are mechanically bonded to copper tubes and copper tube sheets. A polymer strip prevents coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan.

E-coated (outdoor and indoor) coils

A flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins. Coating process shall ensure complete coil encapsulation of tubes, fins and headers.

Pre-coated outdoor coils

A durable epoxy-phenolic coating to provide protection in mildly corrosive coastal environments. The coating minimizes galvanic action between dissimilar metals. Coating is applied to the aluminum fin stock prior to the fin stamping process to create an inert barrier between the aluminum fin and copper tube.

Condenser coil hail guard

Sleek, louvered panels protect the condenser coil from hail damage, foreign objects, and incidental contact.

Single enthalpy sensor

Prevents the wheel from rotating if the outside air conditions are acceptable for free cooling. Both exhaust and supply blowers will remain on.

Stainless steel heat exchanger (48FC units only)

The stainless steel heat exchanger option provides the tubular heat exchanger be made out of a minimum 20 gage type 409 stainless steel for applications where the mixed air to the heat exchanger is expected to drop below 45°F (7°C). Stainless steel may be specified on applications where the presence of airborne contaminants require its use (applications such as paper mills) or in area with very high outdoor humidity that may result in severe condensation in the heat exchanger during cooling operation.

Convenience outlet (powered or un-powered)

Reduce service and/or installation costs by including a convenience outlet in your specification. Carrier will install this service feature at our factory. Provides a convenient, 15 amp, 115v GFCI receptacle with "Wet in Use" cover. The "powered" option allows the installer to power the outlet from the line side of the disconnect or load side as required by code. The "unpowered" option is to be powered from a separate 115/120v power source.

The unpowered convenience outlet is available as a 15 amp factory-installed option or a 20 amp field-installed accessory.

Non-fused disconnect

This OSHA-compliant, factory-installed, safety switch allows a service technician to locally secure power to the rooftop. When selecting a factory-installed non-fused disconnect, note they are sized for the unit as ordered from the factory. The sizing of these do not accommodate field-installed items such as power exhaust devices, etc. If field installing electric heat with factory-installed non-fused disconnect switch, a single point kit may or may not be required.

SystemVu™ controller

Carrier's SystemVu controller is an optional factory-installed and tested controller.

This controller takes on a whole new approach to provide an intuitive, intelligent controller that not only monitors and controls the unit, but also provides linkage to multiple building automation systems.

Each SystemVu controller makes it easy to set up, service, troubleshoot, gain historical data, generate reports and provide comfort only Carrier is noted for.

Key features include:

- Easy to read back lit four line text screen for superior visibility.
- Quick operational condition LEDs of: Run, Alert, and Fault.
- Simple navigation with large keypad buttons of: Navigation arrows, Test, Back, Enter and Menu.
- Capable of being controlled with a conventional thermostat, space sensor or build automation system.
- Service capabilities include:
  Auto run test
  Manual run test
  Component run hours and starts
  Commissioning reports
  Data logging
- Full range of diagnosis:
  Read refrigerant pressures without the need of gages
  Sensor faults
  Compressor reverse rotation
  Economizer diagnostics that meet California Title 24 requirements
- Quick data transfer via USB port:
  Unit configuration uploading/downloading
  Data logging
  Software upgrades
- Built in capacity for:
  i-Vu® open systems
  BACnet systems
  CCN systems
- Configuration and alarm point capability:
  Contain over 100 alarm codes
  Contain over 260 status, troubleshooting, diagnostic and maintenance points
  Contain over 270 control configuration setpoints

RTU Open, multi-protocol controller

Connect the rooftop to an existing BAS (building automation system) without needing complicated translators or adapter modules using the RTU Open controller. The RTU Open controller speaks the 4 most common building automation system languages (BACnet, Modbus, Johnson Controls N2, and LonWorks). Use this controller when you have an existing BAS. Besides the 4 protocols, it also communicates with a Carrier Open system (i-Vu and VVT®).

Condensate overflow switch

This sensor and related controller monitors the condensate level in the drain pan and shuts down compression operation when overflow conditions occur. It includes:

- Indicator light – solid red (more than 10 seconds on water contact – compressors disabled), blinking red (sensor disconnected)
- 10-second delay to break – eliminates nuisance trips from splashing or waves in pan (sensor needs 10 seconds of constant water contact before tripping)
- Disables the compressor(s) operation when condensate plug is detected, but still allows fans to run for economizer.

Power exhaust with barometric relief

Superior internal building pressure control. This field-installed accessory may eliminate the need for costly, external pressure control fans.

Options and accessories (cont)

Field-installed accessories

Filter maintenance indicator

When the optional factory-installed filter maintenance indicator is used, a factory-installed differential pressure switch measures pressure drop across the outside air filter and activates a field-supplied dry contact indicator when the pressure differential exceeds the adjustable switch setpoint.

Condenser coil hail guard

Sleek, louvered panels protect the condenser coil from hail damage, foreign objects, and incidental contact. This can be purchased as a factory-installed option or as a field-installed accessory.

Differential enthalpy sensor

The differential enthalpy sensor is comprised of an outdoor and return air enthalpy sensors to provide differential enthalpy control. The sensor allows the unit to determine if outside air is suitable for free cooling.

Wall or duct mounted CO_2 sensor

The IAQ sensor shall be available in duct or wall mount. The sensor provides demand ventilation indoor air quality (IAQ) control.

Propane conversion kit (48FC units only)

Convert your gas heat rooftop from standard natural gas operation to Propane using this field-installed kit.

High altitude conversion kit (48FC units only)

High altitudes have less oxygen, which affects the fuel/air mixture in heat exchangers. In order to maintain a proper fuel/air mixture, heat exchangers operating in altitudes above 2000 ft (610 m) require different orifices. To select the correct burner orifices or determine the heat capacity for a high altitude application, use either the selection software, or the unit's service manual. High altitudes have less oxygen, which means heat exchangers need less fuel. The new gas orifices in this field-installed kit make the necessary adjustment for high altitude applications. They restore the optimal fuel to air mixture and maintain healthy combustion on altitudes above 2000 ft (610 m).

NOTE: Typical natural gas heating value ranges from 975 to 1050 Btu/ft^3 at sea level nationally. The heating value goes down approximately 1.7% per every thousand feet elevation. Standard factory orifices can typically be used up to 2000 ft (610 m) elevation without any operational issues.

Flue discharge deflector (48FC units only)

The flue discharge deflector is a useful accessory when flue gas recirculation is a concern. By venting the flue discharge upwards, the deflector minimizes the chance for a neighboring unit to intake the flue exhaust.

MERV-8 return air filters

This factory option upgrades the return air filters from standard unit filters to high efficiency MERV-8 filters. Non-woven MERV-8 filter media with high strength, moisture-resistant frame. Filter media is securely fasted inside the filter frame on all four sides.

Phase monitor protection

The Phase Monitor Control will monitor the sequence of three phase electrical system to provide a phase reversal protection; and monitor the three phase voltage inputs to provide a phase loss protection for the three phase device. It will work on either a Delta or Wye power connection.

Winter start kit

The winter start kit by Carrier extends the low ambient limit of your rooftop to 25°F (–4°C). The kit bypasses the low pressure switch, preventing nuisance tripping of the low pressure switch. Other low ambient precautions may still be prudent.

Low ambient controller

The low ambient controller is a head pressure controller kit that is designed to maintain the unit's condenser head pressure during periods of low ambient cooling operation. This device should be used as an alternative to economizer free cooling when economizer usage is either not appropriate or desired. The low ambient controller will either cycle the outdoor fan motors or operate them at reduced speed to maintain the unit operation, depending on the model. This controller allows cooling operation down to –20°F (–29°C) ambient conditions.

Roof curb (14-in./356 mm or 24-in./610 mm)

Full perimeter roof curb with exhaust capability provides separate air streams for energy recovery from the exhaust air without supply air contamination.

Filter status indicator accessory

Monitors static pressure across supply and exhaust filters and provides indication when filters become clogged.

Power exhaust

Superior internal building pressure control. This field-installed accessory may eliminate the need for costly, external pressure control fans.

Manual OA Damper

Manual outdoor air dampers are an economical way to bring in ventilation air. The dampers are available in 25% and 50% versions.

NOTE: See application tip "ROOFTOP-18-01" prior to use of this damper on 07 size models.

Motorized 2-Position Damper

The Carrier 2-position, motorized outdoor air damper admits up to 100% outside air. Using reliable, gear-driven technology, the 2-position damper opens to allow ventilation air and closes when the rooftop stops, stopping unwanted infiltration.

NOTE: See application tip "ROOFTOP-18-01" prior to use of this damper on 07 size models.

Electric Heaters

Carrier offers a full-line of field-installed accessory heaters. The heaters are very easy to use, install and are all pre-engineered and certified.

Time Guard II control circuit

This accessory protects your compressor by preventing short-cycling in the event of some other failure, prevents the compressor from restarting for 30 seconds after stopping. Not required with SystemVu™ controller, RTU Open controller, or authorized commercial thermostats.

OPTIONS AND ACCESSORY WEIGHTS

OPTION / ACCESSORY NAME	48/50FC UNIT WEIGHT							
	04		05		06		07	
	lb	kg	lb	kg	lb	kg	lb	kg
Humidi-MiZer® System*	15	7	15	7	15	7	24	11
Power Exhaust - vertical	51	23	51	23	51	23	51	23
Power Exhaust - horizontal	39	18	39	18	39	18	39	18
EconoMi$er® (X, IV or 2)	35	16	35	16	35	16	35	16
2-Position Damper	39	18	39	18	39	18	58	26
Manual Damper	12	5	12	5	12	5	18	8
Medium Gas Heat (48FC units only)	9	4	9	4	9	4	15	7
High Gas Heat (48FC units only)	—	—	63	29	63	29	63	29
Hail Guard (louvered)	13	6	13	6	13	6	17	8
Cu/Cu Condenser Coil	37	17	74	34	74	34	95	43
Cu/Cu Condenser and Evaporator Coils	75	34	112	51	112	51	165	75
Roof Curb (14-in. curb)	95	43	95	43	95	43	95	43
Roof Curb (24-in. curb)	150	68	150	68	150	68	150	68
CO_2 sensor	2	1	2	1	2	1	2	1
Flue Discharge Deflector	7	3	7	3	7	3	7	3
Optional Indoor Motor/Drive	10	5	10	5	10	5	15	7
Low Ambient Controller	9	4	9	4	9	4	9	4
Winter Start Kit	5	2	5	2	5	2	5	2
Return Air Smoke Detector	7	3	7	3	7	3	7	3
Supply Air Smoke Detector	7	3	7	3	7	3	7	3
Fan Filter Switch	2	1	2	1	2	1	2	1
Non-Fused Disconnect	15	7	15	7	15	7	15	7
Powered Convenience Outlet	36	16	36	16	36	16	36	16
Unpowered Convenience Outlet	4	2	4	2	4	2	4	2
Enthalpy Sensor	2	1	2	1	2	1	2	1
Differential Enthalpy Sensor	3	1	3	1	3	1	3	1

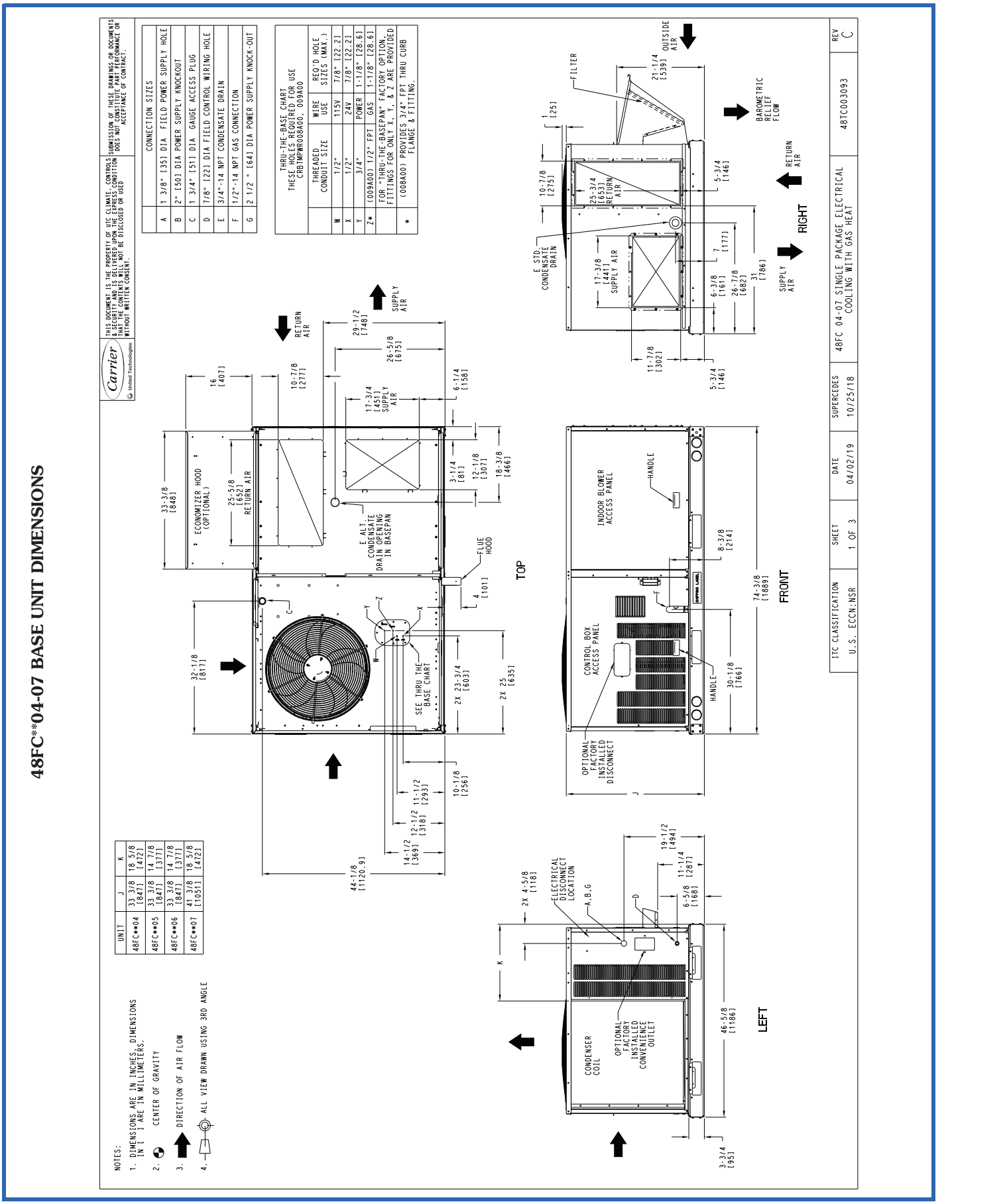
LEGEND

— Not Available

* For Humidi-MiZer system, add Low Ambient controller weight.

NOTE: Where multiple variations are available, the heaviest combination is listed.

Base unit dimensions



48FC**04-07 BASE UNIT DIMENSIONS (cont)

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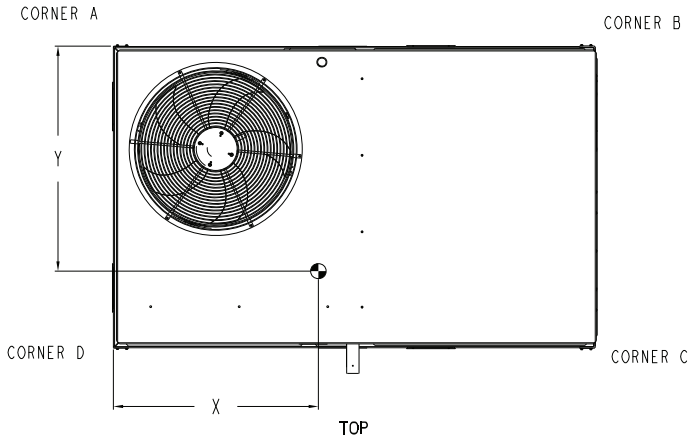
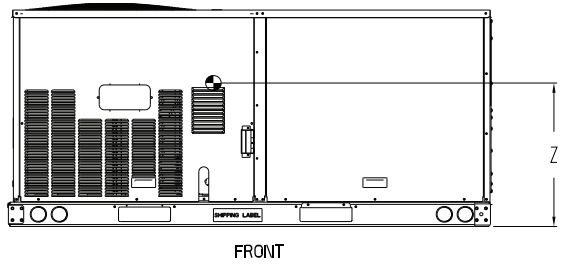
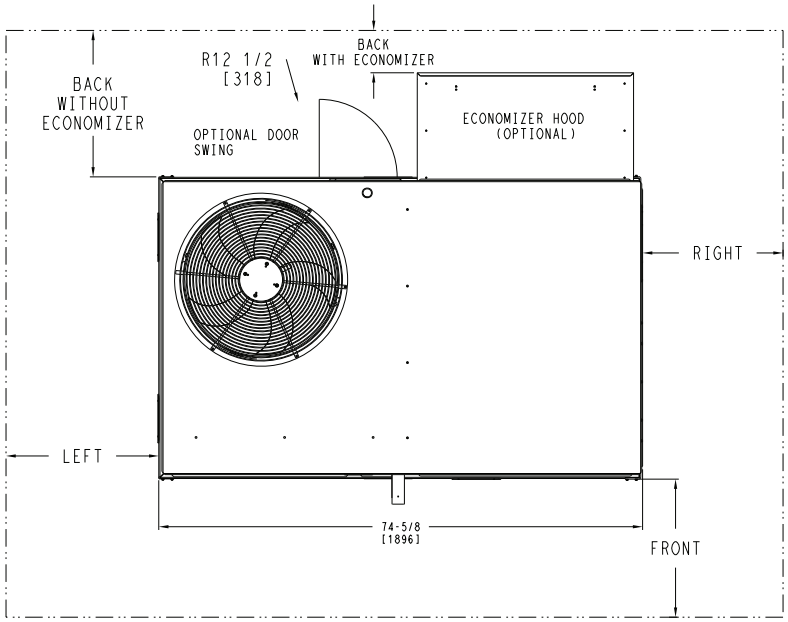
UNIT	STD. UNIT WEIGHT *		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		HEIGHT
	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
48FC**04	482	219	113	51	116	53	128	58	125	57	37 5/8 [956]	24 9/16 [624]	18 1/4 [464]
48FC**05	543	246	138	63	133	60	133	60	138	63	36 1/2 [927]	23 3/8 [594]	18 [457]
48FC**06	556	252	142	64	136	62	136	62	142	64	36 1/2 [927]	23 3/8 [594]	18 [457]
48FC**07	607	275	162	73	152	69	141	64	151	68	36 [914]	22 1/2 [572]	19 3/8 [492]

* STANDARD UNIT WEIGHT IS WITH LOW GAS HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.







NOTES:

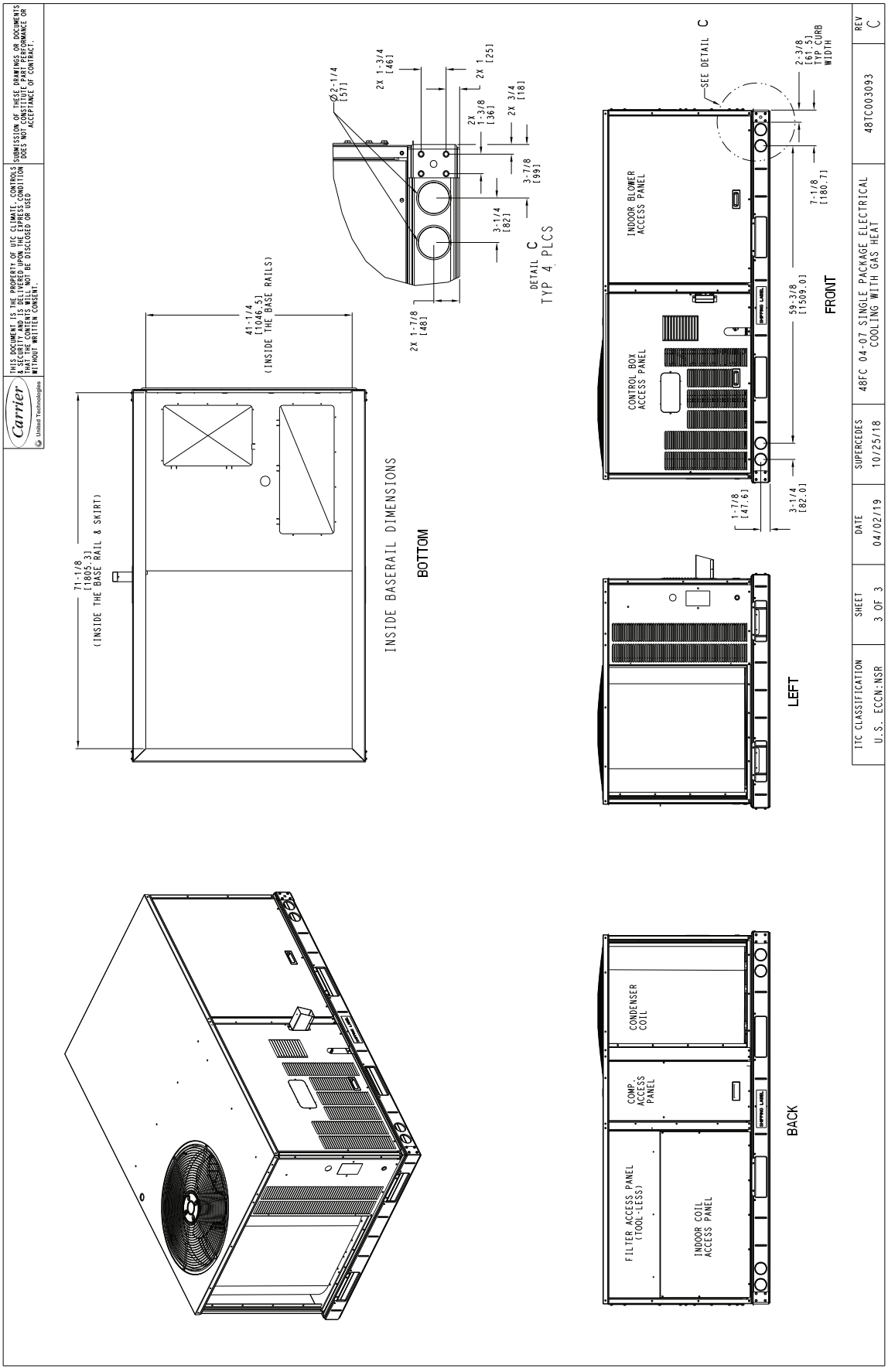
1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

	CLEARANCE		
	SERVICE WITH:	SERVICE WITH:	OPERATING
SURFACE	CONDUCTIVE BARRIER	NONCONDUCTIVE BARRIER	CLEARANCE
FRONT	48 [1219mm]	36 [914mm]	18 [457mm]
LEFT	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/O HOOD	48 [1219mm]	42 [1067mm]	18 [457mm]
BACK W/HOOD	36 [914mm]	36 [914mm]	18 [457mm]
RIGHT	36 [914mm]	36 [914mm]	18 [457mm]
TOP	72 [1829mm]	72 [1829mm]	72 [1829mm]

ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	2 OF 3	04/02/19	10/25/18	48FC 04-07 SINGLE PACKAGE ELECTRICAL COOLING WITH GAS HEAT	48TC003093	C

Base unit dimensions (cont)

48FC**04-07 BASE UNIT DIMENSIONS (cont)



50FC**04-07 BASE UNIT DIMENSIONS

NOTES:

1. DIMENSIONS ARE IN INCHES. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
2. CENTER OF GRAVITY
3. DIRECTION OF AIR FLOW
4. ALL VIEW DRAWN USING 3RD ANGLE

UNIT	J	K
50FC**04	33 3/8 [847]	18 5/8 [472]
50FC**05	33 3/8 [847]	14 7/8 [377]
50FC**06	33 3/8 [847]	14 7/8 [377]
50FC**07	41 3/8 [1051]	18 5/8 [472]

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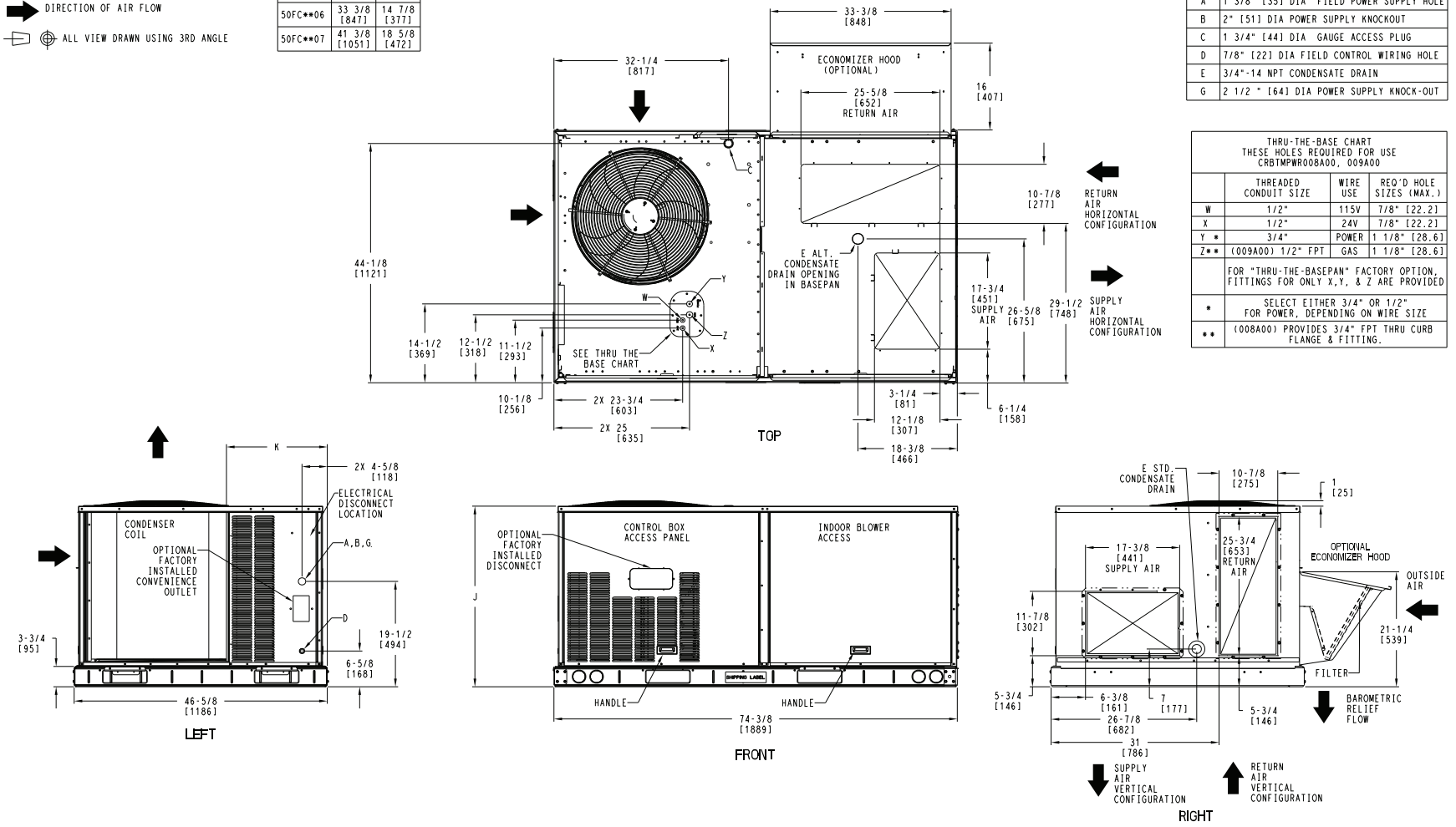
	CONNECTION SIZES
A	1 3/8" [35] DIA FIELD POWER SUPPLY HOLE
B	2" [51] DIA POWER SUPPLY KNOCKOUT
C	1 3/4" [44] DIA GAUGE ACCESS PLUG
D	7/8" [22] DIA FIELD CONTROL WIRING HOLE
E	3/4"-14 NPT CONDENSATE DRAIN
G	2 1/2 " [64] DIA POWER SUPPLY KNOCK-OUT

THRU-THE-BASE CHART
THESE HOLES REQUIRED FOR USE CRBTMPWR008A00, 009A00

	THREADED CONDUIT SIZE	WIRE USE	REQ'D HOLE SIZES (MAX.)
W	1/2"	115V	7/8" [22.2]
X	1/2"	24V	7/8" [22.2]
Y *	3/4"	POWER	1 1/8" [28.6]
Z**	(009A00) 1/2" FPT	GAS	1 1/8" [28.6]
	FOR "THRU-THE-BASEPAN" FACTORY OPTION, FITTINGS FOR ONLY X,Y, & Z ARE PROVIDED		
*	SELECT EITHER 3/4" OR 1/2" FOR POWER, DEPENDING ON WIRE SIZE		
**	(008A00) PROVIDES 3/4" FPT THRU CURB FLANGE & FITTING.		



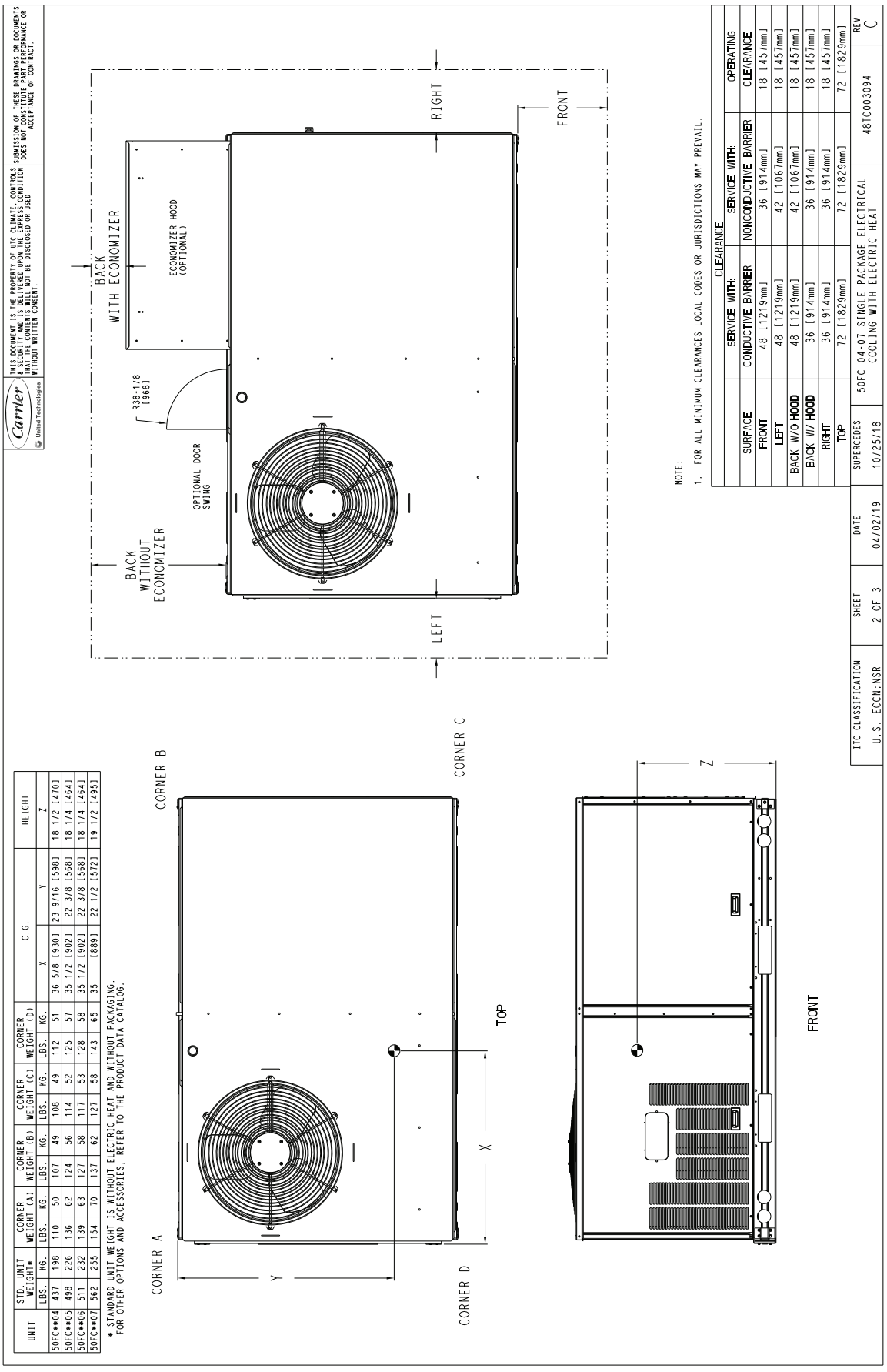
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES			REV
U.S. ECCN:NSR	1 OF 3	04/02/19	10/25/18	50FC 04-07 SINGLE PACKAGE ELECTRICAL COOLING WITH ELECTRIC HEAT	48TC003094	C

Base unit dimensions (cont)

50FC**04-07 BASE UNIT DIMENSIONS (cont)

UNIT	STD. UNIT WEIGHT*		CORNER WEIGHT (A)		CORNER WEIGHT (B)		CORNER WEIGHT (C)		CORNER WEIGHT (D)		C.G.		HEIGHT
	LBS.	KG.	LBS	KG.	LBS.	KG.	LBS.	KG.	LBS.	KG.	X	Y	Z
50FC**04	437	198	110	50	107	49	108	49	112	51	36 5/8 [930]	23 9/16 [598]	18 1/2 [470]
50FC**05	498	226	136	62	124	56	114	52	125	57	35 1/2 [902]	22 3/8 [568]	18 1/4 [464]
50FC**06	511	232	139	63	127	58	117	53	128	58	35 1/2 [902]	22 3/8 [568]	18 1/4 [464]
50FC**07	562	255	154	70	137	62	127	58	143	65	35 [889]	22 1/2 [572]	19 1/2 [495]

* STANDARD UNIT WEIGHT IS WITHOUT ELECTRIC HEAT AND WITHOUT PACKAGING.
FOR OTHER OPTIONS AND ACCESSORIES, REFER TO THE PRODUCT DATA CATALOG.



NOTE:
1. FOR ALL MINIMUM CLEARANCES LOCAL CODES OR JURISDICTIONS MAY PREVAIL.

CLEARANCE				
	SERVICE WITH:		SERVICE WITH:	OPERATING
SURFACE	CONDUCTIVE BARRIER		NONCONDUCTIVE BARRIER	CLEARANCE
FRONT	48 [1219mm]		36 [914mm]	18 [457mm]
LEFT	48 [1219mm]		42 [1067mm]	18 [457mm]
BACK W/O HOOD	48 [1219mm]		42 [1067mm]	18 [457mm]
BACK W/ HOOD	36 [914mm]		36 [914mm]	18 [457mm]
RIGHT	36 [914mm]		36 [914mm]	18 [457mm]
TOP	72 [1829mm]		72 [1829mm]	72 [1829mm]

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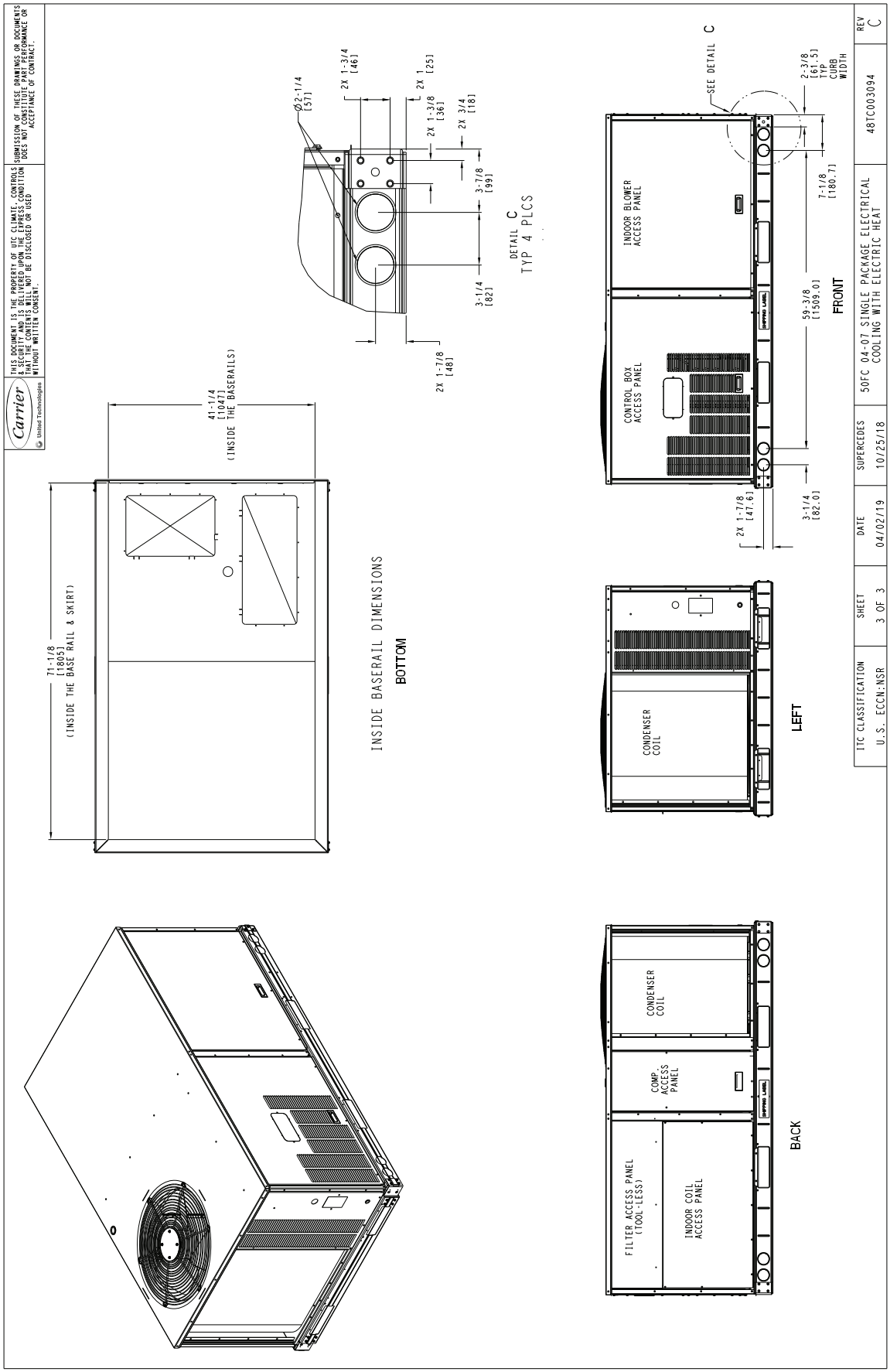
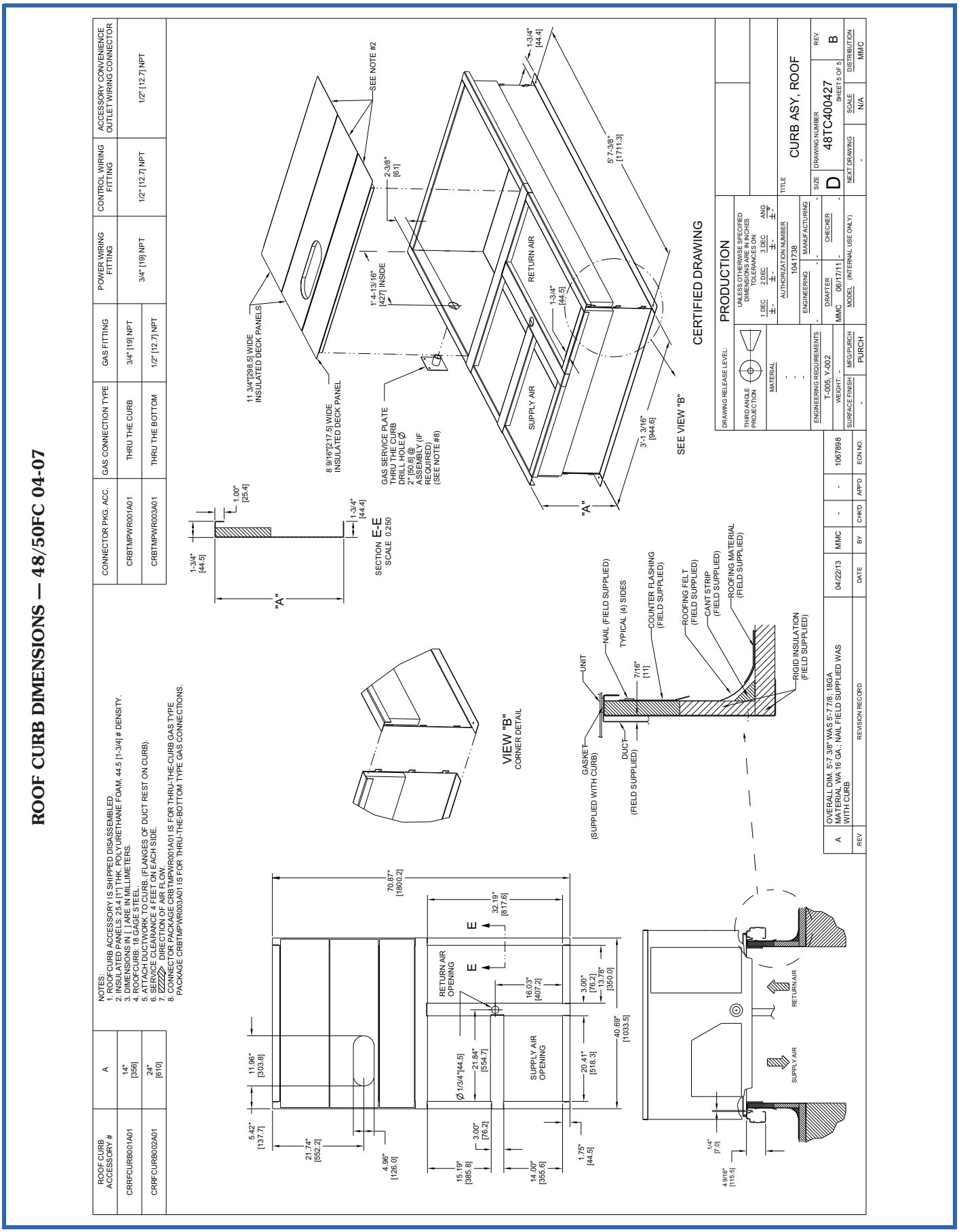
ITC CLASSIFICATION	SHEET	DATE	SUPERCEDES	50FC 04-07 SINGLE PACKAGE ELECTRICAL COOLING WITH ELECTRIC HEAT	48TC003094	REV
U.S. ECCN:NSR	2 OF 3	04/02/19	10/25/18			C

50FC**04-07 BASE UNIT DIMENSIONS (cont)




ROOF CURB DIMENSIONS — 48/50FC 04-07
NOTES:
1. ROOFCURB ACCESSORY IS SHIPPED DISASSEMBLED.
2. INSULATED PANELS: 25.4 [1"] THK. POLYURETHANE FOAM, 44.5 [1-3/4"] # DENSITY.
3. DIMENSIONS IN [ ] ARE IN MILLIMETERS.
4. ROOFCURB MATERIAL: 16 GAGE STEEL.
5. ATTACH DUCTWORK TO CURB. (FLANGES OF DUCT REST ON CURB).
6. SERVICE CLEARANCE 4 FEET ON EACH SIDE.
7. DIRECTION OF AIR FLOW.
8. CONNECTOR PACKAGE CRBTMPWR001A01 IS FOR THRU-THE-CURB GAS TYPE PACKAGE CRBTMPWR003A01 IS FOR THRU-THE-BOTTOM TYPE GAS CONNECTIONS.
ROOF CURB ACCESSORY
A
CRRFCURB001A01
14" [356]
CRRFCURB002A01
24" [610]
CONNECTOR PKG. ACC.
GAS CONNECTION TYPE
GAS FITTING
POWER WIRING FITTING
CONTROL WIRING FITTING
ACCESSORY CONVENIENCE OUTLET WIRING CONNECTOR
CRBTMPWR001A01
THRU THE CURB
3/4" [19] NPT
3/4" [19] NPT
1/2" [12.7] NPT
1/2" [12.7] NPT
CRBTMPWR003A01
THRU THE BOTTOM
1/2" [12.7] NPT
SECTION E-E
SCALE 0.250
1.00" [25.4]
1-3/4" [44.4]
"A"
11 3/4"[298.5] WIDE INSULATED DECK PANELS
8 9/16"[217.5] WIDE INSULATED DECK PANEL
GAS SERVICE PLATE THRU THE CURB DRILL HOLE Ø 2" [50.8] @ ASSEMBLY (IF REQUIRED) (SEE NOTE #8)
1'-4 13/16" [427] INSIDE
2-3/8" [61]
SEE NOTE #2
SUPPLY AIR
RETURN AIR
1-3/4" [44.5]
1-3/4" [44.4]
5' 7-3/8" [1711.3]
3'-1 3/16" [944.6]
SEE VIEW "B"
CERTIFIED DRAWING
DRAWING RELEASE LEVEL: PRODUCTION
THIRD ANGLE PROJECTION
UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES TOLERANCES ON: 1 DEC ± 2 DEC ± 3 DEC ± ANG ±
MATERIAL
ENGINEERING REQUIREMENTS
T-005, Y-002
WEIGHT:
SURFACE FINISH
ENGINEERING
AUTHORIZATION NUMBER 1041738
MANUFACTURING
DRAFTER MMC 06/17/11
CHECKER
MFG/PURCH
MODEL (INTERNAL USE ONLY)
TITLE
CURB ASY, ROOF
SIZE D
DRAWING NUMBER 48TC400427
SHEET 5 OF 5
REV B
NEXT DRAWING
SCALE N/A
DISTRIBUTION MMC
REV
REVISION RECORD
DATE
BY
CHK'D
APP'D
ECN NO.
A
OVERALL DIM. 5'-7 3/8" WAS 5'-7 7/8"-18GA. MATERIAL WA 16 GA.; NAIL FIELD SUPPLIED WAS WITH CURB
04/22/13
MMC
-
-
1067898
VIEW "B"
CORNER DETAIL
UNIT
NAIL (FIELD SUPPLIED)
TYPICAL (4) SIDES
COUNTER FLASHING (FIELD SUPPLIED)
7/16" [11]
ROOFING FELT (FIELD SUPPLIED)
CANT STRIP (FIELD SUPPLIED)
ROOFING MATERIAL (FIELD SUPPLIED)
RIGID INSULATION (FIELD SUPPLIED)
GASKET (SUPPLIED WITH CURB)
DUCT (FIELD SUPPLIED)
70.87" [1800.2]
32.19" [817.6]
E
E
RETURN AIR OPENING
Ø 1/3/4"[44.5]
21.84" [554.7]
SUPPLY AIR OPENING
16.03" [407.2]
3.00" [76.2]
13.78" [350.0]
40.69" [1033.5]
20.41" [518.3]
11.96" [303.8]
5.42" [137.7]
21.74" [552.2]
4.96" [126.0]
15.19" [385.8]
3.00" [76.2]
14.00" [355.6]
1.75" [44.5]
RETURN AIR
SUPPLY AIR
1/4" [7.0]
4 9/16" [116.5]

Performance data

48/50FC**04 SINGLE STAGE COOLING CAPACITIES

48/50FC**04				AMBIENT TEMPERATURE (F)											
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
900 Cfm	EAT (wb)	58	TC	28.6	28.6	32.5	27.0	27.0	30.7	25.2	25.2	28.6	23.2	23.2	26.4
			SHC	24.7	28.6	32.5	23.3	27.0	30.7	21.7	25.2	28.6	20.0	23.2	26.4
		62	TC	31.1	31.1	31.1	28.9	28.9	29.8	26.3	26.3	28.6	23.6	23.6	27.2
			SHC	22.4	26.6	30.9	21.3	25.6	29.8	20.2	24.4	28.6	18.8	23.0	27.2
		67	TC	35.2	35.2	35.2	33.0	33.0	33.0	30.4	30.4	30.4	27.5	27.5	27.5
			SHC	18.7	23.0	27.2	17.8	22.0	26.3	16.7	20.9	25.2	15.5	19.8	24.0
		72	TC	38.9	38.9	38.9	37.2	37.2	37.2	34.8	34.8	34.8	31.9	31.9	31.9
			SHC	14.7	19.0	23.3	14.0	18.3	22.6	13.1	17.3	21.6	12.0	16.3	20.5
		76	TC	—	41.5	41.5	—	40.0	40.0	—	38.0	38.0	—	35.4	35.4
			SHC	—	15.6	20.5	—	15.1	20.0	—	14.3	19.1	—	13.3	17.8
1050 Cfm	EAT (wb)	58	TC	30.5	30.5	34.7	28.8	28.8	32.7	26.9	26.9	30.6	24.8	24.8	28.2
			SHC	26.4	30.5	34.7	24.8	28.8	32.7	23.2	26.9	30.6	21.4	24.8	28.2
		62	TC	32.4	32.4	33.9	30.0	30.0	32.7	27.4	27.4	31.3	24.8	24.8	29.3
			SHC	24.2	29.1	33.9	23.1	27.9	32.7	21.8	26.6	31.3	20.2	24.8	29.3
		67	TC	36.5	36.5	36.5	34.2	34.2	34.2	31.5	31.5	31.5	28.5	28.5	28.5
			SHC	19.8	24.6	29.4	19.0	23.8	28.7	17.9	22.7	27.6	16.7	21.5	26.4
		72	TC	40.0	40.0	40.0	38.3	38.3	38.3	35.9	35.9	35.9	33.0	33.0	33.0
			SHC	15.1	19.9	24.7	14.5	19.3	24.1	13.6	18.5	23.3	12.5	17.4	22.3
		76	TC	—	42.5	42.5	—	40.9	40.9	—	39.0	39.0	—	—	—
			SHC	—	16.3	22.0	—	15.7	21.4	—	14.9	20.2	—	—	—
1200 Cfm	EAT (wb)	58	TC	32.1	32.1	36.5	30.3	30.3	34.4	28.3	28.3	32.2	26.1	26.1	29.7
			SHC	27.8	32.1	36.5	26.2	30.3	34.4	24.4	28.3	32.2	22.5	26.1	29.7
		62	TC	33.3	33.3	36.6	30.9	30.9	35.3	28.4	28.4	33.5	26.1	26.1	30.9
			SHC	25.8	31.2	36.6	24.6	29.9	35.3	23.2	28.4	33.5	21.3	26.1	30.9
		67	TC	37.4	37.4	37.4	35.1	35.1	35.1	32.4	32.4	32.4	29.2	29.2	29.2
			SHC	20.7	25.9	31.2	20.0	25.4	30.8	18.9	24.4	29.8	17.7	23.1	28.6
		72	TC	40.7	40.7	40.7	39.0	39.0	39.0	36.7	36.7	36.7	33.8	33.8	33.8
			SHC	15.4	20.6	25.9	14.8	20.1	25.4	14.0	19.4	24.8	12.9	18.4	23.8
		76	TC	—	43.2	43.2	—	41.5	41.5	—	39.7	39.7	—	—	—
			SHC	—	16.7	23.0	—	16.0	22.1	—	15.3	21.2	—	—	—
1350 Cfm	EAT (wb)	58	TC	33.5	33.5	38.1	31.6	31.6	35.9	29.5	29.5	33.5	27.2	27.2	30.9
			SHC	28.9	33.5	38.1	27.3	31.6	35.9	25.4	29.5	33.5	23.4	27.2	30.9
		62	TC	34.1	34.1	38.9	31.7	31.7	37.5	29.5	29.5	34.9	27.2	27.2	32.2
			SHC	27.1	33.0	38.9	25.9	31.7	37.5	24.1	29.5	34.9	22.2	27.2	32.2
		67	TC	38.0	38.0	38.0	35.8	35.8	35.8	33.0	33.0	33.0	29.8	29.8	30.6
			SHC	21.4	27.1	32.8	20.8	26.8	32.7	19.8	25.9	31.9	18.6	24.6	30.6
		72	TC	41.2	41.2	41.2	39.5	39.5	39.5	37.3	37.3	37.3	34.3	34.3	34.3
			SHC	15.6	21.3	26.9	15.0	20.7	26.5	14.3	20.2	26.1	13.2	19.2	25.3
		76	TC	—	43.7	43.7	—	41.9	41.9	—	40.0	40.0	—	—	—
			SHC	—	17.0	23.6	—	16.3	22.7	—	15.6	21.9	—	—	—
1500 Cfm	EAT (wb)	58	TC	34.5	34.5	39.2	32.7	32.7	37.1	30.5	30.5	34.6	28.1	28.1	31.9
			SHC	29.8	34.5	39.2	28.2	32.7	37.1	26.3	30.5	34.6	24.2	28.1	31.9
		62	TC	35.1	35.1	39.1	32.7	32.7	38.7	30.5	30.5	36.1	28.1	28.1	33.3
			SHC	27.4	33.3	39.1	26.7	32.7	38.7	24.9	30.5	36.1	22.9	28.1	33.3
		67	TC	38.4	38.4	38.4	36.3	36.3	36.3	33.4	33.4	33.8	30.1	30.1	32.5
			SHC	22.1	28.2	34.3	21.6	28.0	34.4	20.6	27.2	33.8	19.4	26.0	32.5
		72	TC	41.6	41.6	41.6	39.8	39.8	39.8	37.7	37.7	37.7	34.7	34.7	34.7
			SHC	15.7	21.8	27.8	15.1	21.3	27.4	14.4	20.8	27.2	13.5	20.0	26.5
		76	TC	—	44.0	44.0	—	42.2	42.2	—	40.2	40.2	—	—	—
			SHC	—	17.2	24.1	—	16.5	23.3	—	15.8	22.5	—	—	—

LEGEND

— — Do Not Operate
Cfm — Cubic Feet Per Minute (Supply Air)
EAT (db) — Entering Air Temperature (dry bulb)
EAT (wb) — Entering Air Temperature (wet bulb)
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTE: See minimum-maximum airflow ratings on page 8.

Performance data (cont)

48/50FC*B04 — UNIT WITH HUMIDI-MIZER® SYSTEM IN SUBCOOLING MODE — COOLING CAPACITIES

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — SCFM/BF								
		900 / 0.01			1200 / 0.02			1500 / 0.04		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	29.90	31.00	30.90	29.80	32.50	33.30	33.80	30.90	26.70
	SHC	14.70	19.40	25.50	24.30	19.80	14.90	13.60	17.70	21.20
	kW	2.51	2.49	2.42	2.82	2.74	2.68	3.09	3.01	2.88
85	TC	31.90	27.50	22.70	18.10	23.10	28.40	23.80	18.30	13.20
	SHC	10.70	14.20	17.40	13.00	10.00	6.90	2.60	5.50	8.40
	kW	3.36	3.23	3.06	3.62	3.41	3.24	3.79	3.58	3.39
95	TC	30.30	31.00	30.90	29.80	32.50	33.30	33.80	30.90	26.70
	SHC	14.80	19.40	25.50	24.30	19.80	14.90	13.60	17.70	21.20
	kW	2.53	2.49	2.41	2.82	2.74	2.68	3.09	3.01	2.88
105	TC	31.90	27.50	22.70	18.10	23.10	28.40	23.80	18.30	13.20
	SHC	10.70	14.20	17.40	13.00	10.00	6.90	2.60	5.50	8.40
	kW	3.36	3.23	3.06	3.62	3.41	3.24	3.79	3.58	3.39
115	TC	30.30	31.00	30.90	29.80	32.50	33.30	33.80	30.90	26.70
	SHC	14.80	19.40	25.50	24.30	19.80	14.90	13.60	17.70	21.20
	kW	2.53	2.49	2.41	2.82	2.74	2.68	3.09	3.01	2.88
125	TC	31.90	27.50	22.70	18.10	23.10	28.40	23.80	18.30	13.2
	SHC	10.70	14.20	17.40	0.00	10.00	6.90	2.60	5.50	8.40
	kW	3.36	3.23	3.06	3.62	3.41	3.24	3.79	3.58	3.39

48/50FC*B04 — UNIT WITH HUMIDI-MIZER SYSTEM IN HOT GAS REHEAT MODE — COOLING CAPACITIES

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — Ewb (F)								
		75 Dry Bulb 62.5 Wet Bulb (50% Relative)			75 Dry Bulb 64 Wet Bulb (56% Relative)			75 Dry Bulb 65.3 Wet Bulb (60% Relative)		
		Air Entering Evaporator — Cfm								
		900	1200	1500	900	1200	1500	900	1200	1500
80	TC	9.81	10.50	10.92	10.83	11.58	12.00	11.78	12.50	12.96
	SHC	1.41	3.09	4.87	0.60	1.98	3.47	-0.05	1.04	2.25
	kW	1.92	1.93	1.94	1.96	1.98	2.00	2.00	2.01	2.02
75	TC	11.71	12.51	13.04	12.67	13.38	13.86	13.44	13.91	14.32
	SHC	3.10	4.87	6.70	2.30	3.67	5.03	1.62	2.51	3.51
	kW	1.87	1.88	1.88	1.89	1.90	1.91	1.91	1.92	1.93
70	TC	13.37	14.10	14.41	13.94	14.53	14.90	14.42	14.95	15.10
	SHC	4.71	6.28	7.52	3.72	4.86	5.88	2.97	4.07	4.47
	kW	1.78	1.80	1.82	1.81	1.83	1.84	1.82	1.82	1.86
60	TC	13.95	14.80	14.62	14.47	15.22	15.53	14.66	14.63	15.46
	SHC	6.20	8.05	7.61	5.67	6.67	7.68	5.03	5.55	6.30
	kW	1.66	1.62	1.70	1.67	1.69	1.68	1.69	1.70	1.71
50	TC	14.26	14.87	15.78	14.65	15.78	16.21	15.01	16.16	16.58
	SHC	5.12	6.39	8.04	3.83	5.37	6.38	2.72	4.09	4.93
	kW	1.98	2.03	1.94	2.01	1.94	1.97	2.03	1.96	1.99
40	TC	14.16	15.50	15.88	15.28	16.24	16.28	15.62	16.60	17.01
	SHC	5.04	6.99	8.14	4.43	5.81	6.44	3.31	4.51	5.34
	kW	2.07	1.95	1.99	1.93	1.91	2.02	1.96	1.94	1.97

LEGEND

Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Compressor Power Input
SCFM/BF — Standard Cubic Feet per Minute/Bypass Factor
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

48/50FC**05 SINGLE STAGE COOLING CAPACITIES

48/50FC**05				AMBIENT TEMPERATURE (F)											
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
1200 Cfm	EAT (wb)	58	TC	40.5	40.5	44.8	37.5	37.5	43.0	34.5	34.5	39.6	30.9	30.9	35.7
			SHC	34.0	39.4	44.8	32.1	37.5	43.0	29.4	34.5	39.6	26.2	30.9	35.7
		62	TC	43.9	43.9	43.9	40.4	40.4	41.0	36.4	36.4	38.7	31.9	31.9	36.2
			SHC	31.1	37.1	43.1	29.0	35.0	41.0	26.7	32.7	38.7	24.2	30.2	36.2
		67	TC	49.3	49.3	49.3	46.1	46.1	46.1	42.3	42.3	42.3	37.8	37.8	37.8
			SHC	25.7	31.5	37.4	23.9	29.8	35.6	21.8	27.7	33.6	19.4	25.4	31.4
		72	TC	54.7	54.7	54.7	51.5	51.5	51.5	48.0	48.0	48.0	44.0	44.0	44.0
			SHC	20.3	25.8	31.2	18.5	24.1	29.7	16.6	22.2	27.9	14.5	20.2	25.9
		76	TC	—	58.5	58.5	—	55.7	55.7	—	52.3	52.3	—	48.4	48.4
			SHC	—	21.2	27.8	—	19.4	26.0	—	17.5	24.1	—	15.8	22.4
1400 Cfm	EAT (wb)	58	TC	43.0	43.0	49.0	40.1	40.1	45.9	37.0	37.0	42.4	33.3	33.3	38.4
			SHC	37.0	43.0	49.0	34.4	40.1	45.9	31.5	37.0	42.4	28.2	33.3	38.4
		62	TC	45.3	45.3	47.5	41.8	41.8	45.3	37.9	37.9	43.0	33.5	33.5	39.7
			SHC	33.6	40.6	47.5	31.5	38.4	45.3	29.2	36.1	43.0	26.4	33.0	39.7
		67	TC	50.9	50.9	50.9	47.5	47.5	47.5	43.7	43.7	43.7	39.2	39.2	39.2
			SHC	27.2	34.0	40.7	25.4	32.2	39.0	23.3	30.2	37.1	21.1	28.0	34.9
		72	TC	56.0	56.0	56.0	52.9	52.9	52.9	49.2	49.2	49.2	45.2	45.2	45.2
			SHC	20.8	27.1	33.5	19.0	25.5	32.1	17.1	23.7	30.3	15.0	21.7	28.4
		76	TC	—	59.8	59.8	—	56.8	56.8	—	53.3	53.3	—	49.3	49.3
			SHC	—	21.5	29.2	—	20.0	27.7	—	18.3	24.3	—	16.5	22.7
1600 Cfm	EAT (wb)	58	TC	45.2	45.2	51.5	42.2	42.2	48.3	39.0	39.0	44.7	35.2	35.2	40.6
			SHC	38.8	45.2	51.5	36.2	42.2	48.3	33.2	39.0	44.7	29.9	35.2	40.6
		62	TC	46.4	46.4	51.4	42.8	42.8	49.0	39.2	39.2	46.0	35.3	35.3	42.4
			SHC	35.8	43.6	51.4	33.6	41.3	49.0	31.0	38.5	46.0	28.1	35.3	42.4
		67	TC	51.9	51.9	51.9	48.4	48.4	48.4	44.6	44.6	44.6	40.0	40.0	40.0
			SHC	28.5	36.1	43.6	26.6	34.3	42.0	24.7	32.5	40.2	22.4	30.2	38.0
		72	TC	56.8	56.8	56.8	53.7	53.7	53.7	50.0	50.0	50.0	45.8	45.8	45.8
			SHC	21.0	28.2	35.3	19.3	26.7	34.0	17.4	24.9	32.4	15.4	22.9	30.5
		76	TC	—	60.4	60.4	—	57.4	57.4	—	53.9	53.9	—	—	—
			SHC	—	22.0	27.8	—	20.5	27.1	—	18.8	25.8	—	—	—
1800 Cfm	EAT (wb)	58	TC	46.8	46.8	53.4	43.9	43.9	50.2	40.5	40.5	46.5	36.8	36.8	42.4
			SHC	40.2	46.8	53.4	37.6	43.9	50.2	34.6	40.5	46.5	31.2	36.8	42.4
		62	TC	47.3	47.3	54.6	45.5	45.5	48.6	41.0	41.0	47.7	36.8	36.8	44.3
			SHC	37.6	46.1	54.6	33.9	41.3	48.6	32.2	39.9	47.7	29.3	36.8	44.3
		67	TC	52.5	52.5	52.5	49.0	49.0	49.0	45.1	45.1	45.1	40.5	40.5	40.9
			SHC	29.5	37.8	46.2	27.7	36.2	44.7	25.8	34.4	43.0	23.5	32.2	40.9
		72	TC	57.3	57.3	57.3	54.1	54.1	54.1	50.4	50.4	50.4	46.2	46.2	46.2
			SHC	21.2	29.0	36.9	19.5	27.6	35.7	17.6	25.8	34.1	15.5	23.9	32.3
		76	TC	—	60.7	60.7	—	57.8	57.8	—	54.2	54.2	—	—	—
			SHC	—	22.2	29.5	—	20.7	28.2	—	19.0	26.9	—	—	—
2000 Cfm	EAT (wb)	58	TC	48.0	48.0	54.8	45.1	45.1	51.6	41.8	41.8	47.9	38.0	38.0	43.7
			SHC	41.3	48.0	54.8	38.6	45.1	51.6	35.6	41.8	47.9	32.2	38.0	43.7
		62	TC	48.5	48.5	56.1	46.6	46.6	49.4	41.8	41.8	50.0	38.0	38.0	45.7
			SHC	38.6	47.3	56.1	34.5	42.0	49.4	33.5	41.8	50.0	30.2	38.0	45.7
		67	TC	52.7	52.7	52.7	49.2	49.2	49.2	45.3	45.3	45.6	40.7	40.7	43.7
			SHC	30.3	39.4	48.5	28.6	37.9	47.2	26.7	36.1	45.6	24.5	34.1	43.7
		72	TC	57.5	57.5	57.5	54.3	54.3	54.3	50.6	50.6	50.6	46.3	46.3	46.3
			SHC	21.1	29.6	38.2	19.4	28.3	37.1	17.6	26.6	35.6	15.6	24.8	33.9
		76	TC	—	60.7	60.7	—	57.8	57.8	—	—	—	—	—	—
			SHC	—	22.3	30.4	—	20.8	29.1	—	—	—	—	—	—

LEGEND

— — Do Not Operate
Cfm — Cubic Feet Per Minute (Supply Air)
EAT (db) — Entering Air Temperature (dry bulb)
EAT (wb) — Entering Air Temperature (wet bulb)
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTE: See minimum-maximum airflow ratings on page 8.

Performance data (cont)

48/50FC*B05 — UNIT WITH HUMIDI-MIZER® SYSTEM IN SUBCOOLING MODE — COOLING CAPACITIES

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — SCFM/BF								
		1200 / 0.04			1600 / 0.07			2000 / 0.10		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	49.7	44.9	40.6	52.9	47.8	43.5	54.8	49.8	0.0
	SHC	20.8	26.2	31.6	24.0	30.9	37.9	26.8	35.2	0.0
	kW	2.50	2.47	2.44	2.46	2.48	2.51	2.53	2.50	0.00
85	TC	46.5	42.0	37.9	49.1	44.7	40.6	51.2	46.5	42.6
	SHC	17.8	23.5	29.2	20.5	28.0	35.2	23.5	32.1	40.5
	kW	2.81	2.78	2.76	2.78	2.80	2.82	2.84	2.81	2.79
95	TC	43.1	38.9	35.1	45.8	41.5	37.6	47.5	43.1	39.4
	SHC	14.6	20.6	26.5	17.5	25.0	32.4	20.1	28.9	37.5
	kW	3.16	3.14	3.12	3.13	3.15	3.18	3.19	3.16	3.14
105	TC	39.3	35.3	32.0	41.8	37.7	34.2	43.4	39.1	35.9
	SHC	11.1	17.3	23.7	13.8	21.5	29.3	16.3	25.3	34.3
	kW	3.56	3.54	3.52	3.54	3.55	3.58	3.59	3.56	3.55
115	TC	35.3	31.8	28.6	37.4	33.7	30.5	39.1	35.3	32.2
	SHC	7.5	14.1	20.6	9.7	17.8	25.9	12.3	21.8	30.8
	kW	4.02	4.01	4.00	4.00	4.01	4.03	4.04	4.03	4.01
125	TC	31.2	27.9	24.9	33.2	29.8	26.8	34.5	31.0	28.3
	SHC	3.7	10.5	17.3	5.9	14.3	22.5	8.1	17.9	27.1
	kW	4.54	4.53	4.53	4.53	4.54	4.54	4.55	4.54	4.54

48/50FC*B05 — UNIT WITH HUMIDI-MIZER SYSTEM IN HOT GAS REHEAT MODE — COOLING CAPACITIES

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — Ewb (F)								
		75 Dry Bulb 62.5 Wet Bulb (50% Relative)			75 Dry Bulb 64 Wet Bulb (56% Relative)			75 Dry Bulb 65.3 Wet Bulb (60% Relative)		
		Air Entering Evaporator — Cfm								
		1200	1600	2000	1200	1600	2000	1200	1600	2000
80	TC	10.55	10.36	10.16	11.65	11.44	11.20	12.56	12.35	12.04
	SHC	-1.90	-1.24	-0.52	-3.80	-3.40	-2.95	-5.39	-5.19	-4.97
	kW	3.15	3.16	3.16	3.19	3.20	3.20	3.22	3.23	3.23
75	TC	12.91	12.76	12.57	13.89	13.76	13.47	14.64	14.56	14.25
	SHC	0.35	0.98	1.63	-1.54	-1.09	-0.76	-3.12	-2.80	-2.65
	kW	3.04	3.05	3.06	3.07	3.08	3.09	3.10	3.12	3.12
70	TC	15.12	14.94	14.82	15.98	15.88	15.60	16.69	16.50	16.13
	SHC	2.51	3.04	3.60	0.68	1.11	1.36	-0.78	-0.55	-0.50
	kW	2.92	2.93	2.95	2.96	2.97	2.98	2.98	2.99	3.00
60	TC	18.97	18.79	18.53	19.24	19.18	18.82	19.83	19.58	21.59
	SHC	6.49	6.91	7.10	4.77	5.17	5.26	3.72	3.89	4.75
	kW	3.17	3.23	3.15	3.21	3.26	3.18	3.23	3.12	3.10
50	TC	17.53	13.35	13.30	13.45	13.58	13.53	13.67	13.79	13.74
	SHC	9.21	8.03	7.71	7.82	7.54	7.16	7.44	7.10	6.68
	kW	3.01	3.07	3.11	3.04	3.10	3.15	3.07	3.14	3.18
40	TC	17.53	13.35	13.30	13.45	13.58	13.53	13.67	13.79	13.74
	SHC	9.21	8.03	7.71	7.82	7.54	7.16	7.44	7.10	6.68
	kW	3.39	3.32	3.24	3.14	3.23	3.15	3.18	3.27	3.08

LEGEND

Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Compressor Power Input
SCFM/BF — Standard Cubic Feet per Minute/Bypass Factor
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

48/50FC**06 SINGLE STAGE COOLING CAPACITIES

48/50FC**06				AMBIENT TEMPERATURE (F)											
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
1500 Cfm	EAT (wb)	58	TC	52.2	52.2	58.7	49.3	49.3	55.4	46.0	46.0	51.7	42.5	42.5	47.7
			SHC	45.7	52.2	58.7	43.2	49.3	55.4	40.3	46.0	51.7	37.2	42.5	47.7
		62	TC	55.2	55.2	56.6	51.3	51.3	54.6	47.1	47.1	52.4	42.6	42.6	49.7
			SHC	41.9	49.2	56.6	40.0	47.3	54.6	37.9	45.2	52.4	35.5	42.6	49.7
		67	TC	61.0	61.0	61.0	57.5	57.5	57.5	53.2	53.2	53.2	48.4	48.4	48.4
			SHC	34.7	41.9	49.1	33.3	40.6	48.0	31.5	38.9	46.2	29.5	36.8	44.2
		72	TC	64.4	64.4	64.4	62.9	62.9	62.9	59.4	59.4	59.4	55.1	55.1	55.1
			SHC	26.4	33.4	40.5	25.8	33.1	40.3	24.5	31.8	39.1	22.8	30.2	37.6
		76	TC	—	66.0	66.0	—	65.1	65.1	—	63.0	63.0	—	59.5	59.5
			SHC	—	26.9	35.1	—	26.5	34.8	—	25.8	34.0	—	24.4	32.4
1750 Cfm	EAT (wb)	58	TC	54.8	54.8	61.7	51.6	51.6	58.1	48.2	48.2	54.3	44.5	44.5	50.1
			SHC	47.9	54.8	61.7	45.1	51.6	58.1	42.1	48.2	54.3	38.9	44.5	50.1
		62	TC	56.5	56.5	60.9	52.7	52.7	59.0	48.4	48.4	56.5	44.6	44.6	52.1
			SHC	44.3	52.6	60.9	42.4	50.7	59.0	40.2	48.4	56.5	37.0	44.6	52.1
		67	TC	62.0	62.0	62.0	58.7	58.7	58.7	54.4	54.4	54.4	49.4	49.4	49.4
			SHC	35.7	43.7	51.7	34.6	42.9	51.2	32.9	41.3	49.7	30.9	39.3	47.8
		72	TC	64.6	64.6	64.6	63.4	63.4	63.4	60.3	60.3	60.3	56.1	56.1	56.1
			SHC	26.2	33.8	41.5	25.8	33.8	41.8	24.6	32.9	41.1	23.1	31.4	39.8
		76	TC	—	65.9	65.9	—	64.8	64.8	—	63.3	63.3	—	59.9	59.9
			SHC	—	27.2	36.8	—	26.7	36.3	—	26.0	35.1	—	24.7	33.5
2000 Cfm	EAT (wb)	58	TC	56.6	56.6	63.8	53.5	53.5	60.3	49.9	49.9	56.3	46.1	46.1	52.0
			SHC	49.4	56.6	63.8	46.7	53.5	60.3	43.6	49.9	56.3	40.2	46.1	52.0
		62	TC	57.5	57.5	64.5	53.7	53.7	62.9	50.0	50.0	58.5	46.1	46.1	54.0
			SHC	46.2	55.3	64.5	44.5	53.7	62.9	41.4	50.0	58.5	38.2	46.1	54.0
		67	TC	62.1	62.1	62.1	59.3	59.3	59.3	55.0	55.0	55.0	50.0	50.0	51.0
			SHC	36.0	44.6	53.3	35.5	44.7	53.9	34.0	43.4	52.8	32.1	41.6	51.0
		72	TC	64.3	64.3	64.3	63.4	63.4	63.4	60.6	60.6	60.6	56.5	56.5	56.5
			SHC	25.7	34.0	42.2	25.4	34.1	42.7	24.5	33.6	42.6	23.1	32.3	41.6
		76	TC	—	65.6	65.6	—	64.1	64.1	—	63.1	63.1	—	59.9	59.9
			SHC	—	27.0	37.5	—	26.4	36.5	—	25.8	35.6	—	24.6	34.3
2250 Cfm	EAT (wb)	58	TC	57.7	57.7	65.2	54.7	54.7	61.8	51.2	51.2	57.8	47.2	47.2	53.3
			SHC	50.2	57.7	65.2	47.6	54.7	61.8	44.5	51.2	57.8	41.0	47.2	53.3
		62	TC	57.9	57.9	67.9	54.8	54.8	64.3	51.2	51.2	60.1	47.2	47.2	55.4
			SHC	47.9	57.9	67.9	45.3	54.8	64.3	42.3	51.2	60.1	39.0	47.2	55.4
		67	TC	61.7	61.7	61.7	59.5	59.5	59.5	55.2	55.2	55.5	50.2	50.2	53.9
			SHC	36.0	45.1	54.3	36.1	46.2	56.2	34.8	45.1	55.5	33.0	43.5	53.9
		72	TC	63.9	63.9	63.9	62.9	62.9	62.9	60.5	60.5	60.5	56.5	56.5	56.5
			SHC	25.1	33.8	42.5	24.9	34.0	43.2	24.2	33.9	43.6	22.8	32.9	43.0
		76	TC	—	65.0	65.0	—	63.5	63.5	—	62.6	62.6	—	59.5	59.5
			SHC	—	26.5	37.3	—	25.9	36.4	—	25.4	35.8	—	24.4	34.6
2500 Cfm	EAT (wb)	58	TC	58.2	58.2	65.9	55.4	55.4	62.7	51.9	51.9	58.8	47.9	47.9	54.3
			SHC	50.6	58.2	65.9	48.1	55.4	62.7	45.1	51.9	58.8	41.6	47.9	54.3
		62	TC	58.2	58.2	68.5	56.4	56.4	59.5	51.9	51.9	61.1	47.9	47.9	56.4
			SHC	48.0	58.2	68.5	42.8	51.1	59.5	42.8	51.9	61.1	39.4	47.9	56.4
		67	TC	61.1	61.1	61.1	59.2	59.2	59.2	55.1	55.1	57.7	50.1	50.1	56.3
			SHC	35.8	45.5	55.2	36.4	47.2	57.9	35.3	46.5	57.7	33.6	44.9	56.3
		72	TC	63.1	63.1	63.1	62.0	62.0	62.0	60.0	60.0	60.0	56.1	56.1	56.1
			SHC	24.3	33.4	42.5	24.0	33.6	43.2	23.5	33.9	44.3	22.3	33.1	43.9
		76	TC	—	64.1	64.1	—	62.7	62.7	—	61.8	61.8	—	58.8	58.8
			SHC	—	25.8	36.9	—	25.2	36.1	—	24.8	35.7	—	23.8	34.7

LEGEND

— — Do Not Operate
Cfm — Cubic Feet Per Minute (Supply Air)
EAT (db) — Entering Air Temperature (dry bulb)
EAT (wb) — Entering Air Temperature (wet bulb)
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTE: See minimum-maximum airflow ratings on page 8.

Performance data (cont)

48/50FC*B06 — UNIT WITH HUMIDI-MIZER® SYSTEM IN SUBCOOLING MODE — COOLING CAPACITIES

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — SCFM/BF								
		1500 / 0.01			2000 / 0.02			2500 / 0.03		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	65.6	59.0	53.7	69.6	63.1	57.4	72.0	65.6	60.4
	SHC	25.3	33.5	42.2	29.9	40.9	51.6	34.3	47.6	60.0
	kW	3.11	3.06	3.03	3.05	3.09	3.16	3.16	3.11	3.07
85	TC	61.1	55.4	50.2	65.0	58.9	53.7	66.8	61.0	56.4
	SHC	21.1	30.0	38.8	25.6	36.9	48.0	29.3	43.3	56.0
	kW	3.47	3.43	3.39	3.42	3.46	3.51	3.52	3.48	3.44
95	TC	56.7	51.2	46.4	60.1	54.5	49.6	62.2	56.5	52.1
	SHC	16.9	26.1	35.2	21.0	32.7	44.2	25.0	39.1	52.1
	kW	3.89	3.85	3.80	3.83	3.88	3.93	3.95	3.90	3.86
105	TC	51.8	46.6	42.0	54.3	49.0	44.4	56.9	51.1	46.9
	SHC	12.3	21.7	31.1	15.5	27.5	39.3	20.0	34.0	46.9
	kW	4.36	4.31	4.26	4.29	4.33	4.38	4.42	4.36	4.32
115	TC	46.5	41.9	37.8	49.1	44.3	40.2	50.8	46.2	42.5
	SHC	7.3	17.3	27.2	10.7	23.2	35.4	14.4	29.4	42.5
	kW	4.88	4.83	4.78	4.81	4.86	4.91	4.93	4.88	4.84
125	TC	40.8	36.7	33.1	43.1	38.9	35.1	44.9	40.5	37.3
	SHC	2.0	12.5	22.8	5.2	18.2	30.5	8.9	24.2	37.3
	kW	5.44	5.39	5.35	5.37	5.42	5.47	5.49	5.44	5.40

48/50FC*B06 — UNIT WITH HUMIDI-MIZER SYSTEM IN HOT GAS REHEAT MODE — COOLING CAPACITIES

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — Ewb (F)								
		75 Dry Bulb 62.5 Wet Bulb (50% Relative)			75 Dry Bulb 64 Wet Bulb (56% Relative)			75 Dry Bulb 65.3 Wet Bulb (60% Relative)		
		Air Entering Evaporator — Cfm								
		1500	2000	2500	1500	2000	2500	1500	2000	2500
80	TC	13.19	12.95	12.70	14.56	14.30	14.00	15.70	15.44	15.05
	SHC	-2.38	-1.55	-0.65	-4.75	-4.25	-3.69	-6.74	-6.49	-6.21
	kW	3.15	3.16	3.16	3.19	3.20	3.20	3.22	3.23	3.23
75	TC	16.14	15.95	15.71	17.36	17.20	16.84	18.30	18.20	17.81
	SHC	0.44	1.23	2.03	-1.92	-1.36	-0.96	-3.90	-3.50	-3.31
	kW	3.04	3.05	3.06	3.07	3.08	3.09	3.10	3.12	3.12
70	TC	18.90	18.68	18.52	19.97	19.85	19.50	20.86	20.62	20.17
	SHC	3.13	3.80	4.51	0.85	1.39	1.70	-0.97	-0.69	-0.63
	kW	2.92	2.93	2.95	2.96	2.97	2.98	2.98	2.99	3.00
60	TC	23.71	23.48	23.16	24.05	23.98	23.52	24.79	24.47	26.99
	SHC	8.11	8.63	8.88	5.97	6.46	6.58	4.65	4.87	5.94
	kW	3.17	3.23	3.15	3.21	3.26	3.18	3.23	3.12	3.10
50	TC	21.91	16.69	16.62	16.81	16.98	16.92	17.08	17.24	17.17
	SHC	11.51	10.04	9.64	9.77	9.43	8.95	9.30	8.88	8.35
	kW	3.01	3.07	3.11	3.04	3.10	3.15	3.07	3.14	3.18
40	TC	21.91	16.69	16.62	16.81	16.98	16.92	17.08	17.24	17.17
	SHC	11.51	10.04	9.64	9.77	9.43	8.95	9.30	8.88	8.35
	kW	3.39	3.32	3.24	3.14	3.23	3.15	3.18	3.27	3.08

LEGEND

Edb — Entering Dry Bulb
Ewb — Entering Wet Bulb
kW — Compressor Power Input
SCFM/BF — Standard Cubic Feet per Minute/Bypass Factor
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

48/50FC**07 HIGH STAGE COOLING CAPACITIES

48/50FC**07				AMBIENT TEMPERATURE (F)											
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
1800 Cfm	EAT (wb)	58	TC	63.8	63.8	72.2	61.1	61.1	69.1	58.1	58.1	65.8	54.9	54.9	62.3
			SHC	55.5	63.8	72.2	53.0	61.1	69.1	50.4	58.1	65.8	47.6	54.9	62.3
		62	TC	67.2	67.2	68.3	63.7	63.7	66.4	60.0	60.0	64.4	56.2	56.2	62.3
			SHC	49.9	59.1	68.3	48.1	57.3	66.4	46.1	55.3	64.4	44.1	53.2	62.3
		67	TC	73.2	73.2	73.2	69.5	69.5	69.5	65.5	65.5	65.5	61.4	61.4	61.4
			SHC	40.8	50.0	59.2	39.0	48.2	57.4	37.1	46.3	55.6	35.2	44.4	53.6
		72	TC	79.7	79.7	79.7	75.7	75.7	75.7	71.5	71.5	71.5	67.1	67.1	67.1
			SHC	31.4	40.7	50.0	29.7	39.0	48.3	27.9	37.2	46.4	26.1	35.3	44.5
		76	TC	—	85.3	85.3	—	81.0	81.0	—	76.6	76.6	—	72.0	72.0
			SHC	—	33.3	43.1	—	31.6	41.3	—	29.8	39.5	—	28	37.6
2100 Cfm	EAT (wb)	58	TC	67.1	67.1	75.9	64.1	64.1	72.5	60.9	60.9	69.0	57.6	57.6	65.2
			SHC	58.3	67.1	75.9	55.7	64.1	72.5	52.8	60.9	69.0	49.9	57.6	65.2
		62	TC	69.0	69.0	74.7	65.4	65.4	72.6	61.6	61.6	70.4	57.7	57.7	68
			SHC	53.6	64.1	74.7	51.7	62.2	72.6	49.6	60.0	70.4	47.4	57.7	68
		67	TC	75.0	75.0	75.0	71.2	71.2	71.2	67.0	67.0	67.0	62.7	62.7	62.7
			SHC	43.2	53.8	64.4	41.4	52.0	62.6	39.5	50.1	60.7	37.6	48.2	58.7
		72	TC	81.6	81.6	81.6	77.5	77.5	77.5	73.1	73.1	73.1	68.5	68.5	68.5
			SHC	32.5	43.2	53.8	30.7	41.4	52.0	28.9	39.5	50.1	27.1	37.6	48.2
		76	TC	—	87.2	87.2	—	82.8	82.8	—	78.2	78.2	—	73.5	73.5
			SHC	—	34.6	45.7	—	32.9	43.9	—	31.1	42.0	—	29.2	40.1
2400 Cfm	EAT (wb)	58	TC	69.7	69.7	78.8	66.6	66.6	75.3	63.2	63.2	71.6	59.7	59.7	67.6
			SHC	60.6	69.7	78.8	57.8	66.6	75.3	54.9	63.2	71.6	51.7	59.7	67.6
		62	TC	70.5	70.5	80.4	66.9	66.9	78.0	63.3	63.3	74.4	59.7	59.7	70.3
			SHC	57.0	68.7	80.4	54.9	66.5	78.0	52.1	63.3	74.4	49.1	59.7	70.3
		67	TC	76.4	76.4	76.4	72.4	72.4	72.4	68.2	68.2	68.2	63.8	63.8	63.8
			SHC	45.5	57.5	69.4	43.7	55.6	67.5	41.8	53.7	65.6	39.8	51.7	63.6
		72	TC	83.1	83.1	83.1	78.8	78.8	78.8	74.2	74.2	74.2	69.6	69.6	69.6
			SHC	33.5	45.5	57.4	31.7	43.6	55.6	29.8	41.8	53.7	28.0	39.9	51.7
		76	TC	—	88.8	88.8	—	84.2	84.2	—	79.5	79.5	—	74.6	74.6
			SHC	—	35.9	48.2	—	34.1	46.4	—	32.3	44.5	—	30.4	42.5
2700 Cfm	EAT (wb)	58	TC	71.9	71.9	81.3	68.7	68.7	77.7	65.1	65.1	73.7	61.5	61.5	69.7
			SHC	62.5	71.9	81.3	59.6	68.7	77.7	56.5	65.1	73.7	53.3	61.5	69.7
		62	TC	72.0	72.0	84.5	68.7	68.7	80.7	65.2	65.2	76.6	61.5	61.5	72.4
			SHC	59.5	72.0	84.5	56.7	68.7	80.7	53.7	65.2	76.6	50.6	61.5	72.4
		67	TC	77.5	77.5	77.5	73.4	73.4	73.4	69.0	69.0	70.3	64.5	64.5	68.3
			SHC	47.7	61.0	74.2	45.9	59.1	72.3	43.9	57.1	70.3	41.9	55.1	68.3
		72	TC	84.2	84.2	84.2	79.8	79.8	79.8	75.2	75.2	75.2	70.4	70.4	70.4
			SHC	34.4	47.6	60.9	32.6	45.8	59.0	30.7	43.9	57.1	28.8	42.0	55.1
		76	TC	—	90.0	90.0	—	85.3	85.3	—	80.5	80.5	—	75.5	75.5
			SHC	—	37.0	50.6	—	35.2	48.7	—	33.4	46.8	—	31.5	44.8
3000 Cfm	EAT (wb)	58	TC	73.8	73.8	83.4	70.4	70.4	79.6	66.8	66.8	75.6	63.0	63.0	71.3
			SHC	64.2	73.8	83.4	61.2	70.4	79.6	58.0	66.8	75.6	54.6	63.0	71.3
		62	TC	73.8	73.8	86.6	70.4	70.4	82.7	66.8	66.8	78.5	63.0	63.0	74.1
			SHC	61.0	73.8	86.6	58.2	70.4	82.7	55.1	66.8	78.5	51.9	63.0	74.1
		67	TC	78.4	78.4	78.9	74.2	74.2	76.9	69.7	69.7	74.8	65.2	65.2	72.6
			SHC	49.8	64.3	78.9	47.9	62.4	76.9	46.0	60.4	74.8	43.9	58.3	72.6
		72	TC	85.1	85.1	85.1	80.6	80.6	80.6	75.9	75.9	75.9	71.1	71.1	71.1
			SHC	35.2	49.7	64.3	33.4	47.9	62.4	31.5	46.0	60.4	29.7	44.0	58.4
		76	TC	—	91.0	91.0	—	86.2	86.2	—	81.3	81.3	—	76.3	76.3
			SHC	—	38.1	52.9	—	36.3	51.0	—	34.5	49.0	—	32.5	47.0

LEGEND

— — Do Not Operate
Cfm — Cubic Feet Per Minute (Supply Air)
EAT (db) — Entering Air Temperature (dry bulb)
EAT (wb) — Entering Air Temperature (wet bulb)
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTE: See minimum-maximum airflow ratings on page 8.

Performance data (cont)

48/50FC**07 LOW STAGE COOLING CAPACITIES

48/50FC**07				AMBIENT TEMPERATURE (F)												
				85			95			105			115		
				EAT (db)			EAT (db)			EAT (db)			EAT (db)		
				75	80	85	75	80	85	75	80	85	75	80	85
1200 Cfm	EAT (wb)	58	TC	44.2	44.2	50.4	41.6	41.6	47.5	38.8	38.8	44.4	35.7	35.7	41.0
			SHC	38.0	44.2	50.4	35.7	41.6	47.5	33.1	38.8	44.4	30.3	35.7	41.0
		62	TC	47.6	47.6	47.6	44.3	44.3	45.1	40.8	40.8	43.0	37.0	37.0	40.7
			SHC	34.0	40.5	47.0	32.0	38.5	45.1	29.9	36.5	43.0	27.7	34.2	40.7
		67	TC	53.1	53.1	53.1	49.7	49.7	49.7	45.9	45.9	45.9	41.9	41.9	41.9
			SHC	28.1	34.7	41.2	26.2	32.7	39.2	24.1	30.6	37.2	21.9	28.5	35.0
		72	TC	59.0	59.0	59.0	55.4	55.4	55.4	51.5	51.5	51.5	47.2	47.2	47.2
			SHC	22.1	28.6	35.2	20.2	26.7	33.3	18.1	24.7	31.2	16.0	22.6	29.1
		76	TC	—	64.2	64.2	—	60.4	60.4	—	56.3	56.3	—	51.8	51.8
			SHC	—	23.7	30.3	—	21.8	28.4	—	19.8	26.4	—	17.8	24.4
1400 Cfm	EAT (wb)	58	TC	47.4	47.4	53.9	44.6	44.6	50.9	41.6	41.6	47.6	38.3	38.3	43.9
			SHC	40.8	47.4	53.9	38.3	44.6	50.9	35.6	41.6	47.6	32.6	38.3	43.9
		62	TC	49.5	49.5	52.3	46.1	46.1	50.3	42.4	42.4	48.1	38.5	38.5	45.7
			SHC	37.2	44.8	52.3	35.2	42.7	50.3	33.0	40.6	48.1	30.7	38.2	45.7
		67	TC	55.0	55.0	55.0	51.5	51.5	51.5	47.5	47.5	47.5	43.3	43.3	43.3
			SHC	30.2	37.8	45.4	28.3	35.8	43.4	26.1	33.7	41.3	23.9	31.5	39.1
		72	TC	61.1	61.1	61.1	57.3	57.3	57.3	53.1	53.1	53.1	48.7	48.7	48.7
			SHC	23.1	30.8	38.4	21.2	28.8	36.4	19.1	26.7	34.3	16.9	24.6	32.2
		76	TC	—	66.4	66.4	—	62.4	62.4	—	58.1	58.1	—	53.4	53.4
			SHC	—	25.0	32.7	—	23.1	30.8	—	21.1	28.8	—	18.9	26.6
1600 Cfm	EAT (wb)	58	TC	50.0	50.0	56.8	47.1	47.1	53.6	43.9	43.9	50.1	40.4	40.4	46.3
			SHC	43.1	50.0	56.8	40.5	47.1	53.6	37.6	43.9	50.1	34.5	40.4	46.3
		62	TC	51.0	51.0	57.3	47.5	47.5	55.2	43.9	43.9	52.3	40.5	40.5	48.4
			SHC	40.2	48.8	57.3	38.1	46.6	55.2	35.6	43.9	52.3	32.6	40.5	48.4
		67	TC	56.5	56.5	56.5	52.8	52.8	52.8	48.7	48.7	48.7	44.3	44.3	44.3
			SHC	32.2	40.9	49.5	30.2	38.8	47.5	28.1	36.7	45.3	25.8	34.5	43.1
		72	TC	62.6	62.6	62.6	58.7	58.7	58.7	54.4	54.4	54.4	49.8	49.8	49.8
			SHC	24.1	32.7	41.4	22.1	30.7	39.4	20.0	28.6	37.3	17.8	26.5	35.1
		76	TC	—	68.0	68.0	—	63.9	63.9	—	59.5	59.5	—	54.7	54.7
			SHC	—	26.2	35	—	24.2	33.0	—	22.2	30.9	—	20.0	28.8
1800 Cfm	EAT (wb)	58	TC	52.2	52.2	59.3	49.2	49.2	56.0	45.8	45.8	52.3	42.2	42.2	48.4
			SHC	45.1	52.2	59.3	42.4	49.2	56.0	39.3	45.8	52.3	36.1	42.2	48.4
		62	TC	52.3	52.3	61.8	49.2	49.2	58.3	45.9	45.9	54.5	42.3	42.3	50.4
			SHC	42.8	52.3	61.8	40.2	49.2	58.3	37.2	45.9	54.5	34.1	42.3	50.4
		67	TC	57.6	57.6	57.6	53.8	53.8	53.8	49.6	49.6	49.6	45.2	45.2	47.0
			SHC	34.1	43.8	53.5	32.1	41.8	51.4	29.9	39.6	49.3	27.6	37.3	47.0
		72	TC	63.8	63.8	63.8	59.8	59.8	59.8	55.4	55.4	55.4	50.7	50.7	50.7
			SHC	24.9	34.6	44.4	22.9	32.6	42.3	20.8	30.5	40.2	18.6	28.3	38.0
		76	TC	—	69.4	69.4	—	65.2	65.2	—	60.6	60.6	—	—	—
			SHC	—	27.3	37.1	—	25.3	35.1	—	23.2	33.0	—	—	—
2000 Cfm	EAT (wb)	58	TC	54.1	54.1	61.5	51.0	51.0	58.0	47.5	47.5	54.2	43.8	43.8	50.1
			SHC	46.8	54.1	61.5	43.9	51.0	58.0	40.8	47.5	54.2	37.4	43.8	50.1
		62	TC	54.2	54.2	64.0	51.0	51.0	60.4	47.6	47.6	56.5	43.8	43.8	52.2
			SHC	44.4	54.2	64.0	41.7	51.0	60.4	38.6	47.6	56.5	35.4	43.8	52.2
		67	TC	58.6	58.6	58.6	54.7	54.7	55.3	50.4	50.4	53.0	45.9	45.9	50.7
			SHC	35.9	46.6	57.3	33.8	44.6	55.3	31.7	42.3	53.0	29.4	40.0	50.7
		72	TC	64.8	64.8	64.8	60.7	60.7	60.7	56.1	56.1	56.1	51.4	51.4	51.4
			SHC	25.7	36.5	47.2	23.7	34.4	45.2	21.5	32.3	43.0	19.3	30.0	40.8
		76	TC	—	70.5	70.5	—	66.2	66.2	—	—	—	—	—	—
			SHC	—	28.3	39.2	—	26.3	37.1	—	—	—	—	—	—

LEGEND

— — Do Not Operate
Cfm — Cubic Feet Per Minute (Supply Air)
EAT (db) — Entering Air Temperature (dry bulb)
EAT (wb) — Entering Air Temperature (wet bulb)
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

NOTE: See minimum-maximum airflow ratings on page 8.

48/50FC*N07 — UNIT WITH HUMIDI-MIZER® SYSTEM IN SUBCOOLING MODE — COOLING CAPACITIES

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — SCFM/BF								
		1800 / 0.06			2400 / 0.08			3000 / 0.10		
		Air Entering Evaporator — Ewb (F)								
		72	67	62	72	67	62	72	67	62
75	TC	73.7	66.6	60.2	78.4	71.0	64.4	81.3	73.7	67.4
	SHC	32.8	40.5	48.3	37.8	47.8	57.7	42.1	54.3	65.7
	kW	4.05	4.01	3.97	4.00	4.04	4.08	4.09	4.05	4.02
85	TC	69.5	62.8	56.8	73.8	67.0	60.7	76.8	69.6	63.6
	SHC	28.8	36.9	45.0	33.4	43.9	54.2	37.7	50.4	62.0
	kW	4.46	4.43	4.39	4.42	4.45	4.48	4.51	4.47	4.43
95	TC	65.1	58.8	53.0	69.3	62.7	56.8	71.9	65.1	59.5
	SHC	24.7	33.1	41.5	29.1	39.9	50.5	33.2	46.1	58.1
	kW	4.92	4.89	4.86	4.88	4.91	4.95	4.96	4.92	4.90
105	TC	60.4	54.4	49.0	64.2	58.0	52.5	66.7	60.3	55.0
	SHC	20.3	29.1	37.9	24.4	35.6	46.6	28.3	41.8	53.9
	kW	5.43	5.40	5.37	5.39	5.42	5.45	5.47	5.43	5.41
115	TC	55.3	49.7	44.7	58.8	53.1	47.9	61.0	55.1	50.1
	SHC	15.7	24.9	34.0	19.5	31.2	42.5	23.2	37.1	50.0
	kW	5.99	5.96	5.93	5.95	5.98	6.01	6.02	5.99	5.97
125	TC	49.8	44.7	40.1	53.0	47.6	43.0	55.0	49.5	45.0
	SHC	10.7	20.5	30.0	14.3	26.4	38.1	17.8	32.1	45.0
	kW	6.59	6.57	6.55	6.56	6.59	6.61	6.62	6.60	6.58

48/50FC*N07 — UNIT WITH HUMIDI-MIZER SYSTEM IN HOT GAS REHEAT MODE — COOLING CAPACITIES

TEMP (F) AIR ENTERING CONDENSER (Edb)		AIR ENTERING EVAPORATOR — Ewb (F)								
		75 Dry Bulb 62.5 Wet Bulb (50% Relative)			75 Dry Bulb 64 Wet Bulb (56% Relative)			75 Dry Bulb 65.3 Wet Bulb (60% Relative)		
		Air Entering Evaporator — Cfm								
		1800	2400	3000	1800	2400	3000	1800	2400	3000
80	TC	14.02	15.01	15.61	14.70	15.71	16.33	15.30	16.34	16.97
	SHC	-0.84	1.73	4.56	-2.95	-0.90	1.45	-4.78	-3.17	-1.24
	kW	4.15	4.16	4.17	4.17	4.18	4.18	4.18	4.19	4.20
75	TC	15.10	16.17	16.79	15.82	16.89	17.52	16.45	17.54	18.19
	SHC	0.25	2.88	5.72	-1.81	0.29	2.64	-3.59	-1.95	-0.02
	kW	3.96	3.97	3.98	3.98	3.99	4.00	4.00	4.01	4.01
70	TC	15.37	16.68	17.44	16.19	17.39	18.18	17.08	18.37	19.28
	SHC	0.50	3.39	6.36	-1.44	0.78	3.30	-2.94	-1.07	1.12
	kW	3.97	3.93	3.91	3.96	3.95	3.93	3.92	3.89	3.87
60	TC	16.00	16.95	17.50	16.64	17.59	18.16	18.27	18.17	19.09
	SHC	1.11	3.63	6.39	-1.04	0.94	3.23	-1.92	-1.39	0.84
	kW	3.95	3.99	4.01	3.99	4.02	4.04	4.09	4.05	4.01
50	TC	16.10	16.93	17.42	16.68	17.50	18.57	17.19	18.60	19.12
	SHC	1.18	3.58	6.29	-1.05	0.83	3.63	-2.98	-0.98	0.84
	kW	4.03	4.08	4.11	4.07	4.12	4.05	4.12	4.06	4.09
40	TC	16.83	17.62	18.25	17.38	18.17	18.61	17.86	19.42	19.92
	SHC	1.89	4.25	5.84	-0.36	1.47	3.65	-2.32	-0.17	1.62
	kW	3.96	4.02	4.08	4.01	4.08	4.11	4.06	4.00	4.03

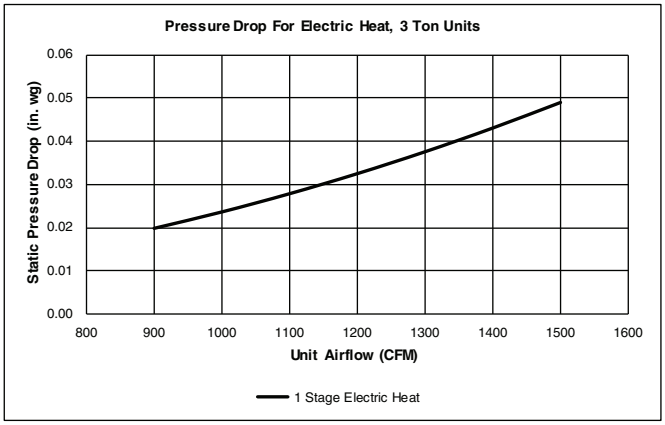
LEGEND

Ewb — Entering wet bulb
kW — compressor Power Input
SCFM/BF — Standard Cubic Feet per Minute/Bypass Factor
SHC — Sensible Heat Capacity (1000 Btuh) Gross
TC — Total Capacity (1000 Btuh) Gross

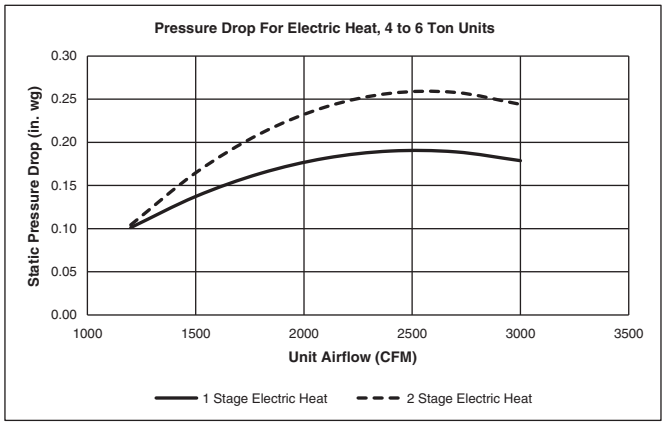
Performance data (cont)

PRESSURE DROPS FOR ELECTRIC AND GAS HEATING UNITS

PRESSURE DROP FOR ELECTRIC HEAT 3 TO 5 TON UNITS - 1 STAGE HEAT



PRESSURE DROP FOR ELECTRIC HEAT 4 TO 6 TON UNITS - 1 AND 2 STAGE HEAT



SINGLE PHASE GAS HEAT STAGES

UNIT SIZE	HEAT SIZE		
1 Phase	Low	Med	High
04	1	1	—
05	1	1	1
06	1	1	1

THREE PHASE GAS HEAT STAGES

UNIT SIZE	HEAT SIZE		
3 Phase	Low	Med	High
04	1	2	—
05	1	1	2
06	1	1	2
07	1	1	2

GAS HEAT STATIC PRESSURE DEDUCTIONS – 3 TON UNITS

CFM	900	1000	1100	1200	1300	1400	1500
Low Gas Heat Deduction	0.01	0.01	0.02	0.03	0.03	0.04	0.04

GAS HEAT STATIC PRESSURE DEDUCTIONS – 4 TO 6 TON UNITS

CFM	1200	1500	1800	2100	2400	2700	3000
Medium Gas Heat Deduction	0.01	0.05	0.08	0.12	0.15	0.18	0.20
Low Gas Heat Deduction	0.03	0.10	0.17	0.23	0.29	0.36	0.42

FIELD-INSTALLED ACCESSORY ELECTRIC HEATER DATA

50FC UNIT SIZE	VOLTAGE	HEATER MODEL NUMBER*	NUMBER OF STAGES
04	208/230	CRHEATER323A00	1
		CRHEATER324A00	1
		CRHEATER325A00	1
		CRHEATER326A00	1
		CRHEATER327A00	2
		CRHEATER328A00	1
	460	CRHEATER333A00	1
		CRHEATER334A00	1
		CRHEATER335A00	1
		CRHEATER336A00	1
	575	CRHEATER339A00	1
		CRHEATER340A00	1
05	208/230	CRHEATER323A00	1
		CRHEATER324A00	1
		CRHEATER325A00	1
		CRHEATER326A00	1
		CRHEATER327A00	2
		CRHEATER328A00	1
		CRHEATER329A00	2
		CRHEATER330A00†	2
		CRHEATER331A00**	2
	460	CRHEATER333A00	1
		CRHEATER335A00	1
		CRHEATER336A00	1
		CRHEATER337A00	2
	575	CRHEATER339A00	1
		CRHEATER340A00	1
06, 07	208/230	CRHEATER324A00	1
		CRHEATER325A00	1
		CRHEATER326A00	1
		CRHEATER327A00	2
		CRHEATER328A00	1
		CRHEATER329A00	2
		CRHEATER331A00	2
		CRHEATER332A00	2
	460	CRHEATER333A00	1
		CRHEATER335A00	1
		CRHEATER336A00	1
		CRHEATER337A00	2
		CRHEATER338A00	2
	575	CRHEATER340A00	1
		CRHEATER341A00	2

*Check heater nameplate for model number.

†Do not use with size 05 horizontal supply duct configuration units.

**Do not use with size 05 vertical supply duct configuration units.

USE OF CRHEATER330A00 FOR 50FC UNITS (WITH OR WITHOUT NON-FUSED DISCONNECT)

DUCT CONFIGURATION	50FC UNIT SIZE			
	04	05	06	07
Vertical Supply	Not available	Available	Not available	Not available
Horizontal Supply	Not available	Not available	Not available	Not available

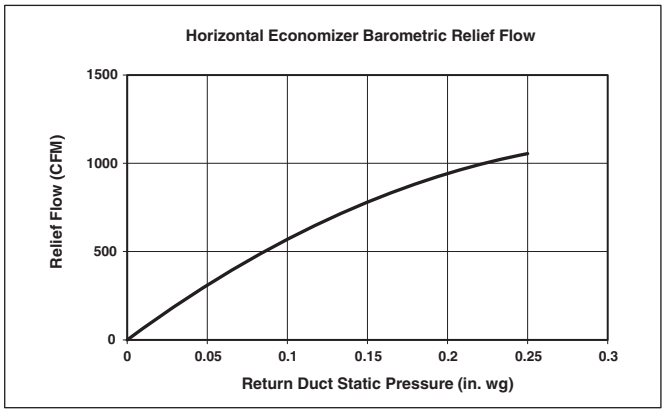
USE OF CRHEATER331A00 FOR 50FC UNITS (WITH OR WITHOUT NON-FUSED DISCONNECT)

DUCT CONFIGURATION	50FC UNIT SIZE			
	04	05	06	07
Vertical Supply	Not available	Not available	Available	Available
Horizontal Supply	Not available	Available	Available	Available

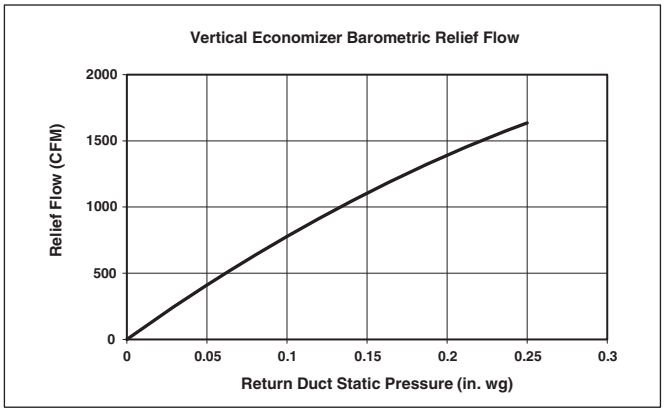
Performance data (cont)

ECONOMIZER BAROMETRIC RELIEF AND STATIC PRESSURE

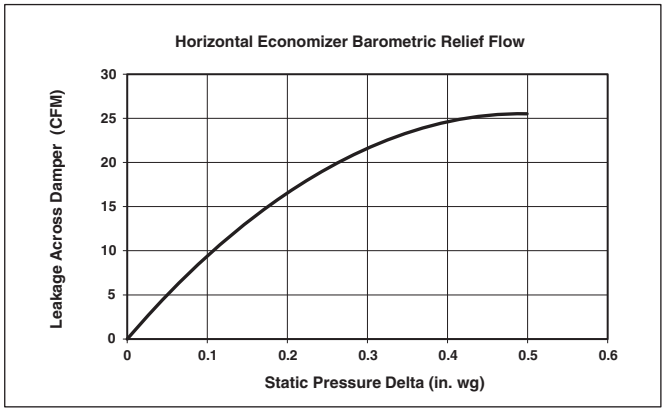
HORIZONTAL ECONOMIZER BAROMETRIC RELIEF



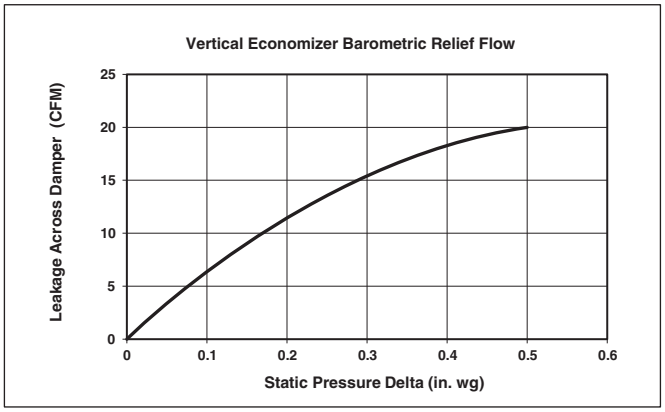
VERTICAL ECONOMIZER BAROMETRIC RELIEF



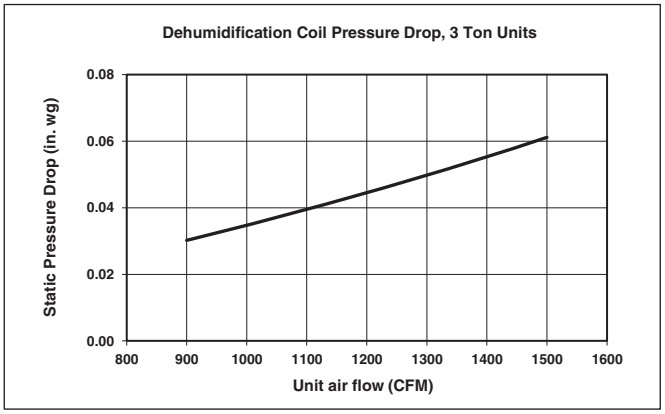
HORIZONTAL ECONOMIZER DAMPER LEAKAGE

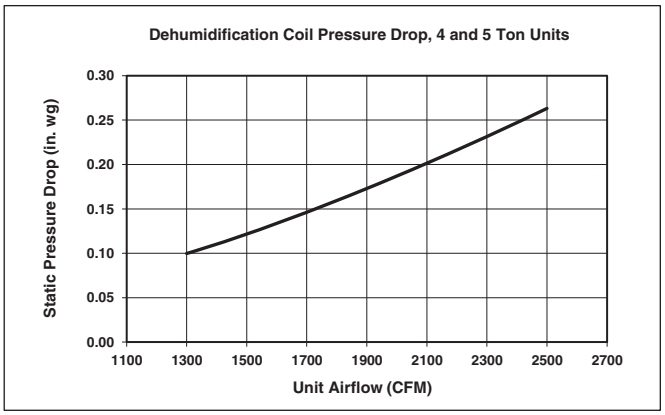


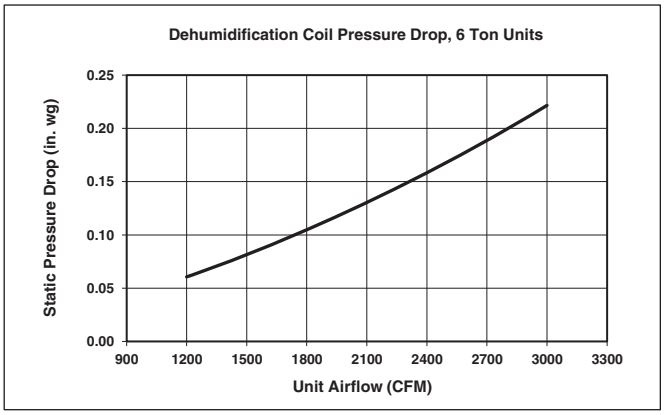
VERTICAL ECONOMIZER DAMPER LEAKAGE



HUMIDI-MIZER® COIL PRESSURE DROPS







MERV-8 filters pressure drop

NOTE: For factory-installed MERV-8 filters, no additional pressure drop adjustments are necessary. The standard fan tables accommodate usage.

GENERAL FAN PERFORMANCE NOTES

1. Interpolation is permissible. Do not extrapolate.
2. External static pressure is the static pressure difference between the return duct and the supply duct plus the static pressure caused by any FIOPs or accessories.
3. Tabular data accounts for pressure loss due to clean filters, unit casing, wet coils, and highest gas heat exchanger (when gas heat unit).
4. Factory options and accessories may effect static pressure losses. Gas heat unit fan tables assume highest gas heat models; for fan selections with low or medium heat models, the user must deduct low and medium heat static pressures. Selection software is available, through your salesperson, to help you select the best motor/drive combination for your application.
5. The fan performance tables offer motor/drive recommendations. In cases when two motor/drive combinations would work, Carrier recommends the lower horsepower option.
6. For information on the electrical properties of Carrier motors, please see the Electrical information section of this book.
7. For more information on the performance limits of Carrier motors, see the application data section of this book.
8. The EPACT (Energy Policy Act of 1992) regulates energy requirements for specific types of indoor fan motors. Motors regulated by EPACT include any general purpose, T-frame (three-digit, 143 and larger), single-speed, foot mounted, polyphase, squirrel cage induction motors of NEMA (National Electrical Manufacturers Association) design A and B, manufactured for use in the United States. Ranging from 1 to 200 Hp, these continuous-duty motors operate on 230 and 460 volt, 60 Hz power. If a motor does not fit into these specifications, the motor does not have to be replaced by an EPACT compliant energy-efficient motor. Variable-speed motors are exempt from EPACT compliance requirements.

48FCEA04 SINGLE PHASE — 3 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1112	0.10	1341	0.17	1530	0.25	1696	0.34	1845	0.44
975	1162	0.11	1385	0.19	1571	0.27	1733	0.36	1881	0.46
1050	1213	0.12	1431	0.20	1613	0.29	1772	0.39	1917	0.49
1125	1265	0.14	1477	0.22	1656	0.32	1813	0.41	1956	0.52
1200	1319	0.16	1525	0.25	1700	0.34	1855	0.44	1996	0.55
1275	1374	0.18	1573	0.27	1746	0.37	1898	0.48	2037	0.59
1350	1430	0.20	1623	0.30	1792	0.40	1942	0.51	2079	0.63
1425	1487	0.23	1674	0.33	1839	0.43	1987	0.55	2122	0.67
1500	1545	0.26	1725	0.36	1887	0.47	2032	0.58	2165	0.71

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1983	0.54	2111	0.66	2231	0.77	2344	0.90	2452	1.03
975	2016	0.57	2143	0.69	2262	0.81	2375	0.93	2482	1.06
1050	2051	0.60	2177	0.72	2294	0.84	2406	0.97	–	–
1125	2088	0.63	2211	0.75	2328	0.88	2438	1.01	–	–
1200	2126	0.67	2248	0.79	2363	0.92	2472	1.05	–	–
1275	2165	0.71	2285	0.83	2399	0.96	–	–	–	–
1350	2205	0.75	2324	0.87	2437	1.01	–	–	–	–
1425	2247	0.79	2364	0.92	2475	1.06	–	–	–	–
1500	2289	0.84	2405	0.97	–	–	–	–	–	–

Standard Static 1112-1890 RPM, 0.44 Max BHP

Medium Static 1112-2190 RPM, 0.71 Max BHP

High Static 1112-2490 RPM, 1.07 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEA04 SINGLE PHASE – STANDARD STATIC — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1112	5.9	1341	7.1	1530	8.1	1696	9.0	1845	9.8
975	1162	6.1	1385	7.3	1571	8.3	1733	9.2	—	—
1050	1213	6.4	1431	7.6	1613	8.5	1772	9.4	—	—
1125	1265	6.7	1477	7.8	1656	8.8	1813	9.6	—	—
1200	1319	7.0	1525	8.1	1700	9.0	1855	9.8	—	—
1275	1374	7.3	1573	8.3	1746	9.2	—	—	—	—
1350	1430	7.6	1623	8.6	1792	9.5	—	—	—	—
1425	1487	7.9	1674	8.9	1839	9.7	—	—	—	—
1500	1545	8.2	1725	9.1	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	—	—	—	—	—	—	—	—	—	—
975	—	—	—	—	—	—	—	—	—	—
1050	—	—	—	—	—	—	—	—	—	—
1125	—	—	—	—	—	—	—	—	—	—
1200	—	—	—	—	—	—	—	—	—	—
1275	—	—	—	—	—	—	—	—	—	—
1350	—	—	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard Static 1112-1890 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCEA04 SINGLE PHASE – MEDIUM STATIC — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1112	5.1	1341	6.1	1530	7.0	1696	7.7	1845	8.4
975	1162	5.3	1385	6.3	1571	7.2	1733	7.9	1881	8.6
1050	1213	5.5	1431	6.5	1613	7.4	1772	8.1	1917	8.8
1125	1265	5.8	1477	6.7	1656	7.6	1813	8.3	1956	8.9
1200	1319	6.0	1525	7.0	1700	7.8	1855	8.5	1996	9.1
1275	1374	6.3	1573	7.2	1746	8.0	1898	8.7	2037	9.3
1350	1430	6.5	1623	7.4	1792	8.2	1942	8.9	2079	9.5
1425	1487	6.8	1674	7.6	1839	8.4	1987	9.1	2122	9.7
1500	1545	7.1	1725	7.9	1887	8.6	2032	9.3	2165	9.9

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1983	9.1	2111	9.6	—	—	—	—	—	—
975	2016	9.2	2143	9.8	—	—	—	—	—	—
1050	2051	9.4	—	—	—	—	—	—	—	—
1125	2088	9.5	—	—	—	—	—	—	—	—
1200	2126	9.7	—	—	—	—	—	—	—	—
1275	2165	9.9	—	—	—	—	—	—	—	—
1350	—	—	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Medium Static 1112-2190 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEA04 SINGLE PHASE – HIGH STATIC — 3 TON VERTICAL SUPPLY (PRM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1112	4.5	1341	5.4	1530	6.1	1696	6.8	1845	7.4
975	1162	4.7	1385	5.6	1571	6.3	1733	7.0	1881	7.6
1050	1213	4.9	1431	5.7	1613	6.5	1772	7.1	1917	7.7
1125	1265	5.1	1477	5.9	1656	6.7	1813	7.3	1956	7.9
1200	1319	5.3	1525	6.1	1700	6.8	1855	7.4	1996	8.0
1275	1374	5.5	1573	6.3	1746	7.0	1898	7.6	2037	8.2
1350	1430	5.7	1623	6.5	1792	7.2	1942	7.8	2079	8.3
1425	1487	6.0	1674	6.7	1839	7.4	1987	8.0	2122	8.5
1500	1545	6.2	1725	6.9	1887	7.6	2032	8.2	2165	8.7

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1983	8.0	2111	8.5	2231	9.0	2344	9.4	2452	9.8
975	2016	8.1	2143	8.6	2262	9.1	2375	9.5	2482	10.0
1050	2051	8.2	2177	8.7	2294	9.2	2406	9.7	—	—
1125	2088	8.4	2211	8.9	2328	9.3	2438	9.8	—	—
1200	2126	8.5	2248	9.0	2363	9.5	2472	9.9	—	—
1275	2165	8.7	2285	9.2	2399	9.6	—	—	—	—
1350	2205	8.9	2324	9.3	2437	9.8	—	—	—	—
1425	2247	9.0	2364	9.5	2475	9.9	—	—	—	—
1500	2289	9.2	2405	9.7	—	—	—	—	—	—

High Static 1112-2490 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEA04 THREE PHASE — 3 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1112	0.10	1341	0.17	1530	0.25	1696	0.34	1845	0.44
975	1162	0.11	1385	0.19	1571	0.27	1733	0.36	1881	0.46
1050	1213	0.12	1431	0.20	1613	0.29	1772	0.39	1917	0.49
1125	1265	0.14	1477	0.22	1656	0.32	1813	0.41	1956	0.52
1200	1319	0.16	1525	0.25	1700	0.34	1855	0.44	1996	0.55
1275	1374	0.18	1573	0.27	1746	0.37	1898	0.48	2037	0.59
1350	1430	0.20	1623	0.30	1792	0.40	1942	0.51	2079	0.63
1425	1487	0.23	1674	0.33	1839	0.43	1987	0.55	2122	0.67
1500	1545	0.26	1725	0.36	1887	0.47	2032	0.58	2165	0.71

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1983	0.54	2111	0.66	2231	0.77	2344	0.90	2452	1.03
975	2016	0.57	2143	0.69	2262	0.81	2375	0.93	2482	1.06
1050	2051	0.60	2177	0.72	2294	0.84	2406	0.97	—	—
1125	2088	0.63	2211	0.75	2328	0.88	2438	1.01	—	—
1200	2126	0.67	2248	0.79	2363	0.92	2472	1.05	—	—
1275	2165	0.71	2285	0.83	2399	0.96	—	—	—	—
1350	2205	0.75	2324	0.87	2437	1.01	—	—	—	—
1425	2247	0.79	2364	0.92	2475	1.06	—	—	—	—
1500	2289	0.84	2405	0.97	—	—	—	—	—	—

Standard Static 1112-1890 RPM, 0.44 Max BHP

Medium Static 1112-2190 RPM, 0.71 Max BHP

High Static 1112-2490 RPM, 1.07 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEA04 THREE PHASE – STANDARD STATIC — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1112	5.9	1341	7.1	1530	8.1	1696	9.0	1845	9.8
975	1162	6.1	1385	7.3	1571	8.3	1733	9.2	—	—
1050	1213	6.4	1431	7.6	1613	8.5	1772	9.4	—	—
1125	1265	6.7	1477	7.8	1656	8.8	1813	9.6	—	—
1200	1319	7.0	1525	8.1	1700	9.0	1855	9.8	—	—
1275	1374	7.3	1573	8.3	1746	9.2	—	—	—	—
1350	1430	7.6	1623	8.6	1792	9.5	—	—	—	—
1425	1487	7.9	1674	8.9	1839	9.7	—	—	—	—
1500	1545	8.2	1725	9.1	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	—	—	—	—	—	—	—	—	—	—
975	—	—	—	—	—	—	—	—	—	—
1050	—	—	—	—	—	—	—	—	—	—
1125	—	—	—	—	—	—	—	—	—	—
1200	—	—	—	—	—	—	—	—	—	—
1275	—	—	—	—	—	—	—	—	—	—
1350	—	—	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard Static 1112-1890 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCEA04 THREE PHASE – MEDIUM STATIC — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1112	5.1	1341	6.1	1530	7.0	1696	7.7	1845	8.4
975	1162	5.3	1385	6.3	1571	7.2	1733	7.9	1881	8.6
1050	1213	5.5	1431	6.5	1613	7.4	1772	8.1	1917	8.8
1125	1265	5.8	1477	6.7	1656	7.6	1813	8.3	1956	8.9
1200	1319	6.0	1525	7.0	1700	7.8	1855	8.5	1996	9.1
1275	1374	6.3	1573	7.2	1746	8.0	1898	8.7	2037	9.3
1350	1430	6.5	1623	7.4	1792	8.2	1942	8.9	2079	9.5
1425	1487	6.8	1674	7.6	1839	8.4	1987	9.1	2122	9.7
1500	1545	7.1	1725	7.9	1887	8.6	2032	9.3	2165	9.9

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1983	9.1	2111	9.6	—	—	—	—	—	—
975	2016	9.2	2143	9.8	—	—	—	—	—	—
1050	2051	9.4	—	—	—	—	—	—	—	—
1125	2088	9.5	—	—	—	—	—	—	—	—
1200	2126	9.7	—	—	—	—	—	—	—	—
1275	2165	9.9	—	—	—	—	—	—	—	—
1350	—	—	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Medium Static 1112-2190 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEA04 THREE PHASE – HIGH STATIC — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1112	4.5	1341	5.4	1530	6.1	1696	6.8	1845	7.4
975	1162	4.7	1385	5.6	1571	6.3	1733	7.0	1881	7.6
1050	1213	4.9	1431	5.7	1613	6.5	1772	7.1	1917	7.7
1125	1265	5.1	1477	5.9	1656	6.7	1813	7.3	1956	7.9
1200	1319	5.3	1525	6.1	1700	6.8	1855	7.4	1996	8.0
1275	1374	5.5	1573	6.3	1746	7.0	1898	7.6	2037	8.2
1350	1430	5.7	1623	6.5	1792	7.2	1942	7.8	2079	8.3
1425	1487	6.0	1674	6.7	1839	7.4	1987	8.0	2122	8.5
1500	1545	6.2	1725	6.9	1887	7.6	2032	8.2	2165	8.7

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1983	8.0	2111	8.5	2231	9.0	2344	9.4	2452	9.8
975	2016	8.1	2143	8.6	2262	9.1	2375	9.5	2482	10.0
1050	2051	8.2	2177	8.7	2294	9.2	2406	9.7	—	—
1125	2088	8.4	2211	8.9	2328	9.3	2438	9.8	—	—
1200	2126	8.5	2248	9.0	2363	9.5	2472	9.9	—	—
1275	2165	8.7	2285	9.2	2399	9.6	—	—	—	—
1350	2205	8.9	2324	9.3	2437	9.8	—	—	—	—
1425	2247	9.0	2364	9.5	2475	9.9	—	—	—	—
1500	2289	9.2	2405	9.7	—	—	—	—	—	—

High Static 1112-2490 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA05 SINGLE PHASE — 4 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1262	0.21	1452	0.33	1614	0.45	1757	0.58	1888	0.72
1300	1333	0.25	1516	0.37	1674	0.50	1813	0.63	1942	0.78
1400	1405	0.29	1583	0.42	1735	0.55	1872	0.70	1997	0.84
1500	1478	0.34	1650	0.48	1798	0.62	1932	0.76	2054	0.92
1600	1552	0.40	1718	0.54	1863	0.68	1993	0.84	2114	1.00
1700	1627	0.46	1787	0.60	1928	0.76	2057	0.92	2174	1.09
1800	1704	0.52	1857	0.68	1995	0.84	2121	1.01	2236	1.18
1900	1781	0.60	1929	0.76	2063	0.93	2185	1.10	2299	1.28
2000	1859	0.68	2001	0.85	2132	1.02	2252	1.21	2363	1.39

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	2011	0.87	2126	1.02	2236	1.19	2341	1.37	2442	1.55
1300	2061	0.93	2174	1.09	2281	1.26	2384	1.44	—	—
1400	2114	1.00	2224	1.17	2329	1.34	2429	1.52	—	—
1500	2169	1.08	2277	1.25	2379	1.43	—	—	—	—
1600	2226	1.17	2331	1.34	2432	1.52	—	—	—	—
1700	2284	1.26	2388	1.44	—	—	—	—	—	—
1800	2344	1.36	2446	1.55	—	—	—	—	—	—
1900	2405	1.47	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Standard Static 1262-1900 RPM, 0.72 Max BHP

Medium Static 1262-2170 RPM, 1.06 Max BHP

High Static 1262-2460 RPM, 1.53 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA05 SINGLE PHASE – STANDARD STATIC — 4 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1262	6.6	1452	7.6	1614	8.5	1757	9.2	1888	9.9
1300	1333	7.0	1516	8.0	1674	8.8	1813	9.5	—	—
1400	1405	7.4	1583	8.3	1735	9.1	1872	9.9	—	—
1500	1478	7.8	1650	8.7	1798	9.5	—	—	—	—
1600	1552	8.2	1718	9.0	1863	9.8	—	—	—	—
1700	1627	8.6	1787	9.4	—	—	—	—	—	—
1800	1704	9.0	1857	9.8	—	—	—	—	—	—
1900	1781	9.4	—	—	—	—	—	—	—	—
2000	1859	9.8	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	—	—	—	—	—	—	—	—	—	—
1300	—	—	—	—	—	—	—	—	—	—
1400	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Standard Static 1262-1900 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCFA05 SINGLE PHASE – MEDIUM STATIC — 4 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1262	5.8	1452	6.7	1614	7.4	1757	8.1	1888	8.7
1300	1333	6.1	1516	7.0	1674	7.7	1813	8.4	1942	8.9
1400	1405	6.5	1583	7.3	1735	8.0	1872	8.6	1997	9.2
1500	1478	6.8	1650	7.6	1798	8.3	1932	8.9	2054	9.5
1600	1552	7.2	1718	7.9	1863	8.6	1993	9.2	2114	9.7
1700	1627	7.5	1787	8.2	1928	8.9	2057	9.5	—	—
1800	1704	7.9	1857	8.6	1995	9.2	2121	9.8	—	—
1900	1781	8.2	1929	8.9	2063	9.5	—	—	—	—
2000	1859	8.6	2001	9.2	2132	9.8	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	2011	9.3	2126	9.8	—	—	—	—	—	—
1300	2061	9.5	—	—	—	—	—	—	—	—
1400	2114	9.7	—	—	—	—	—	—	—	—
1500	2169	10.0	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Medium Static 1262-2170 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA05 SINGLE PHASE – HIGH STATIC — 4 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1262	5.1	1452	5.9	1614	6.6	1757	7.1	1888	7.7
1300	1333	5.4	1516	6.2	1674	6.8	1813	7.4	1942	7.9
1400	1405	5.7	1583	6.4	1735	7.1	1872	7.6	1997	8.1
1500	1478	6.0	1650	6.7	1798	7.3	1932	7.9	2054	8.3
1600	1552	6.3	1718	7.0	1863	7.6	1993	8.1	2114	8.6
1700	1627	6.6	1787	7.3	1928	7.8	2057	8.4	2174	8.8
1800	1704	6.9	1857	7.5	1995	8.1	2121	8.6	2236	9.1
1900	1781	7.2	1929	7.8	2063	8.4	2185	8.9	2299	9.3
2000	1859	7.6	2001	8.1	2132	8.7	2252	9.2	2363	9.6

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	2011	8.2	2126	8.6	2236	9.1	2341	9.5	2442	9.9
1300	2061	8.4	2174	8.8	2281	9.3	2384	9.7	—	—
1400	2114	8.6	2224	9.0	2329	9.5	2429	9.9	—	—
1500	2169	8.8	2277	9.3	2379	9.7	—	—	—	—
1600	2226	9.0	2331	9.5	2432	9.9	—	—	—	—
1700	2284	9.3	2388	9.7	—	—	—	—	—	—
1800	2344	9.5	2446	9.9	—	—	—	—	—	—
1900	2405	9.8	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

High Static 1262-2460 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA05 THREE PHASE — 4 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1262	0.21	1453	0.33	1614	0.45	1757	0.58	1888	0.72
1300	1333	0.25	1517	0.37	1674	0.50	1814	0.63	1942	0.78
1400	1405	0.29	1583	0.42	1736	0.56	1872	0.70	1998	0.85
1500	1478	0.34	1650	0.48	1799	0.62	1932	0.76	2055	0.92
1600	1553	0.40	1718	0.54	1863	0.68	1994	0.84	2114	1.00
1700	1628	0.46	1787	0.60	1929	0.76	2057	0.92	2174	1.09
1800	1704	0.52	1858	0.68	1995	0.84	2121	1.01	2236	1.18
1900	1781	0.60	1929	0.76	2063	0.93	2186	1.10	2299	1.28
2000	1859	0.68	2001	0.85	2132	1.02	2252	1.21	2363	1.39

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	2011	0.87	2126	1.02	2236	1.19	2341	1.37	2442	1.55
1300	2061	0.93	2174	1.09	2281	1.26	2383	1.44	2482	1.62
1400	2114	1.00	2224	1.17	2329	1.34	2429	1.52	2526	1.71
1500	2169	1.08	2277	1.25	2379	1.43	2478	1.61	2572	1.80
1600	2226	1.17	2332	1.34	2432	1.52	2528	1.71	2621	1.91
1700	2284	1.26	2388	1.44	2487	1.63	2581	1.82	—	—
1800	2344	1.36	2446	1.55	2543	1.74	2636	1.94	—	—
1900	2405	1.47	2505	1.66	2600	1.86	—	—	—	—
2000	2467	1.59	2566	1.79	2659	1.99	—	—	—	—

Standard Static 1262-1900 RPM, 0.72 Max BHP

Medium Static 1262-2170 RPM, 1.06 Max BHP

High Static 1262-2660 RPM, 1.92 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA05 THREE PHASE – STANDARD STATIC — 4 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1262	6.6	1453	7.6	1614	8.5	1757	9.2	1888	9.9
1300	1333	7.0	1517	8.0	1674	8.8	1814	9.5	—	—
1400	1405	7.4	1583	8.3	1736	9.1	1872	9.9	—	—
1500	1478	7.8	1650	8.7	1799	9.5	—	—	—	—
1600	1553	8.2	1718	9.0	1863	9.8	—	—	—	—
1700	1628	8.6	1787	9.4	—	—	—	—	—	—
1800	1704	9.0	1858	9.8	—	—	—	—	—	—
1900	1781	9.4	—		—	—	—	—	—	—
2000	1859	9.8	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	—	—	—	—	—	—	—	—	—	—
1300	—	—	—	—	—	—	—	—	—	—
1400	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Standard Static 1262-1900 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCFA05 THREE PHASE – MEDIUM STATIC — 4 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1262	5.8	1453	6.7	1614	7.4	1757	8.1	1888	8.7
1300	1333	6.1	1517	7.0	1674	7.7	1814	8.4	1942	8.9
1400	1405	6.5	1583	7.3	1736	8.0	1872	8.6	1998	9.2
1500	1478	6.8	1650	7.6	1799	8.3	1932	8.9	2055	9.5
1600	1553	7.2	1718	7.9	1863	8.6	1994	9.2	2114	9.7
1700	1628	7.5	1787	8.2	1929	8.9	2057	9.5	—	—
1800	1704	7.9	1858	8.6	1995	9.2	2121	9.8	—	—
1900	1781	8.2	1929	8.9	2063	9.5	—	—	—	—
2000	1859	8.6	2001	9.2	2132	9.8	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	2011	9.3	2126	9.8	—	—	—	—	—	—
1300	2061	9.5	—	—	—	—	—	—	—	—
1400	2114	9.7	—	—	—	—	—	—	—	—
1500	2169	10.0	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Medium Static 1262-2170 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA05 THREE PHASE – HIGH STATIC — 4 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1262	4.7	1453	5.5	1614	6.1	1757	6.6	1888	7.1
1300	1333	5.0	1517	5.7	1674	6.3	1814	6.8	1942	7.3
1400	1405	5.3	1583	6.0	1736	6.5	1872	7.0	1998	7.5
1500	1478	5.6	1650	6.2	1799	6.8	1932	7.3	2055	7.7
1600	1553	5.8	1718	6.5	1863	7.0	1994	7.5	2114	7.9
1700	1628	6.1	1787	6.7	1929	7.3	2057	7.7	2174	8.2
1800	1704	6.4	1858	7.0	1995	7.5	2121	8.0	2236	8.4
1900	1781	6.7	1929	7.3	2063	7.8	2186	8.2	2299	8.6
2000	1859	7.0	2001	7.5	2132	8.0	2252	8.5	2363	8.9

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	2011	7.6	2126	8.0	2236	8.4	2341	8.8	2442	9.2
1300	2061	7.7	2174	8.2	2281	8.6	2383	9.0	2482	9.3
1400	2114	7.9	2224	8.4	2329	8.8	2429	9.1	2526	9.5
1500	2169	8.2	2277	8.6	2379	8.9	2478	9.3	2572	9.7
1600	2226	8.4	2332	8.8	2432	9.1	2528	9.5	2621	9.9
1700	2284	8.6	2388	9.0	2487	9.3	2581	9.7	—	—
1800	2344	8.8	2446	9.2	2543	9.6	2636	9.9	—	—
1900	2405	9.0	2505	9.4	2600	9.8	—	—	—	—
2000	2467	9.3	2566	9.6	2659	10.0	—	—	—	—

High Static 1262-2660 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA06 SINGLE PHASE — 5 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	1478	0.34	1650	0.48	1799	0.62	1932	0.76	2055	0.92
1625	1571	0.41	1735	0.55	1879	0.70	2009	0.86	2129	1.02
1750	1666	0.49	1822	0.64	1962	0.80	2088	0.96	2205	1.13
1875	1761	0.58	1910	0.74	2046	0.91	2169	1.08	2283	1.26
2000	1859	0.68	2001	0.85	2132	1.02	2252	1.21	2363	1.39
2125	1957	0.79	2093	0.97	2218	1.15	2335	1.34	—	—
2250	2056	0.92	2185	1.10	2307	1.30	—	—	—	—
2375	2155	1.06	2279	1.25	—	—	—	—	—	—
2500	2256	1.21	2374	1.41	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	2169	1.08	2277	1.25	2379	1.43	—	—	—	—
1625	2240	1.19	2345	1.37	—	—	—	—	—	—
1750	2314	1.31	—	—	—	—	—	—	—	—
1875	2389	1.44	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard Static 1478-2150 RPM, 1.06 Max BHP

Medium Static 1478-2390 RPM, 1.44 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA06 SINGLE PHASE – STANDARD STATIC — 5 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1478	6.9	1650	7.7	1799	8.4	1932	9.0	2055	9.6
1625	1571	7.3	1735	8.1	1879	8.7	2009	9.3	2129	9.9
1750	1666	7.7	1822	8.5	1962	9.1	2088	9.7	—	—
1875	1761	8.2	1910	8.9	2046	9.5	—	—	—	—
2000	1859	8.6	2001	9.3	2132	9.9	—	—	—	—
2125	1957	9.1	2093	9.7	—	—	—	—	—	—
2250	2056	9.6	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	—	—	—	—	—	—	—	—	—	—
1625	—	—	—	—	—	—	—	—	—	—
1750	—	—	—	—	—	—	—	—	—	—
1875	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard Static 1478-2150 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCFA06 SINGLE PHASE – MEDIUM STATIC — 5 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1478	6.2	1650	6.9	1799	7.5	1932	8.1	2055	8.6
1625	1571	6.6	1735	7.3	1879	7.9	2009	8.4	2129	8.9
1750	1666	7.0	1822	7.6	1962	8.2	2088	8.7	2205	9.2
1875	1761	7.4	1910	8.0	2046	8.6	2169	9.1	2283	9.6
2000	1859	7.8	2001	8.4	2132	8.9	2252	9.4	2363	9.9
2125	1957	8.2	2093	8.8	2218	9.3	2335	9.8	—	—
2250	2056	8.6	2185	9.1	2307	9.7	—	—	—	—
2375	2155	9.0	2279	9.5	—	—	—	—	—	—
2500	2256	9.4	2374	9.9	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2169	9.1	2277	9.5	2379	10.0	—	—	—	—
1625	2240	9.4	2345	9.8	—	—	—	—	—	—
1750	2314	9.7	—	—	—	—	—	—	—	—
1875	2389	10.0	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Medium Static 1478-2390 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA06 THREE PHASE — 5 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	1478	0.34	1650	0.48	1798	0.62	1932	0.76	2055	0.92
1625	1571	0.41	1735	0.55	1879	0.70	2009	0.86	2129	1.02
1750	1665	0.49	1822	0.64	1962	0.80	2088	0.96	2205	1.13
1875	1762	0.58	1911	0.74	2046	0.91	2169	1.08	2283	1.26
2000	1859	0.68	2001	0.85	2132	1.02	2252	1.21	2363	1.39
2125	1957	0.79	2093	0.97	2219	1.15	2335	1.34	2444	1.54
2250	2055	0.92	2185	1.10	2307	1.30	2420	1.50	2527	1.70
2375	2156	1.06	2279	1.25	2397	1.45	2507	1.66	2610	1.88
2500	2256	1.21	2374	1.41	2487	1.62	2594	1.84	2695	2.07

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	2169	1.08	2277	1.25	2379	1.43	2477	1.61	2572	1.80
1625	2240	1.19	2345	1.37	2445	1.55	2541	1.74	2633	1.93
1750	2314	1.31	2417	1.49	2514	1.68	2608	1.88	2698	2.08
1875	2389	1.44	2490	1.63	2586	1.83	2677	2.03	2766	2.24
2000	2467	1.59	2565	1.78	2659	1.99	2749	2.20	2836	2.41
2125	2546	1.74	2643	1.95	2734	2.16	2823	2.38	—	—
2250	2627	1.91	2721	2.13	2812	2.35	—	—	—	—
2375	2708	2.10	2801	2.32	—	—	—	—	—	—
2500	2791	2.30	—	—	—	—	—	—	—	—

Standard Static 1478-2150 RPM, 1.06 Max BHP

Medium Static 1478-2390 RPM, 1.44 Max BHP

High Static 1478-2836 RPM, 2.43 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA06 THREE PHASE – STANDARD STATIC — 5 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1478	6.9	1650	7.7	1798	8.4	1932	9.0	2055	9.6
1625	1571	7.3	1735	8.1	1879	8.7	2009	9.3	2129	9.9
1750	1665	7.7	1822	8.5	1962	9.1	2088	9.7		
1875	1762	8.2	1911	8.9	2046	9.5	—	—	—	—
2000	1859	8.6	2001	9.3	2132	9.9	—	—	—	—
2125	1957	9.1	2093	9.7	—	—	—	—	—	—
2250	2055	9.6	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	—	—	—	—	—	—	—	—	—	—
1625	—	—	—	—	—	—	—	—	—	—
1750	—	—	—	—	—	—	—	—	—	—
1875	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard Static 1478-2150 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCFA06 THREE PHASE – MEDIUM STATIC — 5 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1478	6.2	1650	6.9	1798	7.5	1932	8.1	2055	8.6
1625	1571	6.6	1735	7.3	1879	7.9	2009	8.4	2129	8.9
1750	1665	7.0	1822	7.6	1962	8.2	2088	8.7	2205	9.2
1875	1762	7.4	1911	8.0	2046	8.6	2169	9.1	2283	9.6
2000	1859	7.8	2001	8.4	2132	8.9	2252	9.4	2363	9.9
2125	1957	8.2	2093	8.8	2219	9.3	2335	9.8	—	—
2250	2055	8.6	2185	9.1	2307	9.7	—	—	—	—
2375	2156	9.0	2279	9.5	—	—	—	—	—	—
2500	2256	9.4	2374	9.9	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2169	9.1	2277	9.5	2379	10.0	—	—	—	—
1625	2240	9.4	2345	9.8	—	—	—	—	—	—
1750	2314	9.7	—	—	—	—	—	—	—	—
1875	2389	10.0	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Medium Static 1478-2390 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA06 THREE PHASE – HIGH STATIC — 5 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1478	5.2	1650	5.8	1798	6.3	1932	6.8	2055	7.2
1625	1571	5.5	1735	6.1	1879	6.6	2009	7.1	2129	7.5
1750	1665	5.9	1822	6.4	1962	6.9	2088	7.4	2205	7.8
1875	1762	6.2	1911	6.7	2046	7.2	2169	7.6	2283	8.1
2000	1859	6.6	2001	7.1	2132	7.5	2252	7.9	2363	8.3
2125	1957	6.9	2093	7.4	2219	7.8	2335	8.2	2444	8.6
2250	2055	7.2	2185	7.7	2307	8.1	2420	8.5	2527	8.9
2375	2156	7.6	2279	8.0	2397	8.5	2507	8.8	2610	9.2
2500	2256	8.0	2374	8.4	2487	8.8	2594	9.1	2695	9.5

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2169	7.6	2277	8.0	2379	8.4	2477	8.7	2572	9.1
1625	2240	7.9	2345	8.3	2445	8.6	2541	9.0	2633	9.3
1750	2314	8.2	2417	8.5	2514	8.9	2608	9.2	2698	9.5
1875	2389	8.4	2490	8.8	2586	9.1	2677	9.4	2766	9.8
2000	2467	8.7	2565	9.0	2659	9.4	2749	9.7	2836	10.0
2125	2546	9.0	2643	9.3	2734	9.6	2823	10.0	—	—
2250	2627	9.3	2721	9.6	2812	9.9	—	—	—	—
2375	2708	9.5	2801	9.9	—	—	—	—	—	—
2500	2791	9.8	—	—	—	—	—	—	—	—

High Static 1478-2836 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFM07 THREE PHASE — 6 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1800	1596	0.43	1749	0.56	1889	0.71	2015	0.86	2131	1.02
1950	1704	0.52	1847	0.67	1981	0.82	2104	0.98	2217	1.15
2100	1814	0.63	1948	0.78	2075	0.94	2194	1.12	2305	1.29
2250	1924	0.75	2050	0.91	2172	1.08	2286	1.26	2394	1.45
2400	2037	0.89	2155	1.06	2270	1.24	2381	1.43	2485	1.62
2550	2150	1.05	2261	1.22	2370	1.41	2476	1.61	2578	1.81
2700	2265	1.23	2368	1.40	2472	1.60	2574	1.80	2672	2.02
2850	2379	1.43	2477	1.61	2576	1.81	2674	2.02	2768	2.24
3000	2495	1.64	2587	1.83	2681	2.04	2775	2.26	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1800	2239	1.19	2340	1.35	2436	1.53	2528	1.71	2615	1.89
1950	2323	1.32	2422	1.50	2516	1.68	2605	1.87	2691	2.06
2100	2408	1.47	2505	1.66	2597	1.85	2685	2.04	2770	2.25
2250	2495	1.64	2590	1.84	2681	2.04	2767	2.24	—	—
2400	2584	1.82	2677	2.03	2766	2.24	—	—	—	—
2550	2674	2.02	2766	2.24	—	—	—	—	—	—
2700	2766	2.24	—	—	—	—	—	—	—	—
2850	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

Standard Static 1596-2300 RPM, 1.31 Max BHP

Medium Static 1596-2530 RPM, 1.76 Max BHP

High Static 1596-2836 RPM, 2.43 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFM07 THREE PHASE – STANDARD STATIC — 6 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	1596	6.9	1749	7.6	1889	8.2	2015	8.8	2131	9.3
1950	1704	7.4	1847	8.0	1981	8.6	2104	9.1	2217	9.6
2100	1814	7.9	1948	8.5	2075	9.0	2194	9.5	—	—
2250	1925	8.4	2050	8.9	2172	9.4	2286	9.9	—	—
2400	2037	8.9	2154	9.4	2270	9.9	—	—	—	—
2550	2150	9.3	2261	9.8	—	—	—	—	—	—
2700	2265	9.8	—	—	—	—	—	—	—	—
2850	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	2239	9.7	—	—	—	—	—	—	—	—
1950	—	—	—	—	—	—	—	—	—	—
2100	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2400	—	—	—	—	—	—	—	—	—	—
2550	—	—	—	—	—	—	—	—	—	—
2700	—	—	—	—	—	—	—	—	—	—
2850	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

Standard Static 1596-2300 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCFM07 THREE PHASE – MEDIUM STATIC — 6 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	1596	6.3	1749	6.9	1889	7.5	2015	8.0	2131	8.4
1950	1704	6.7	1847	7.3	1981	7.8	2104	8.3	2217	8.8
2100	1814	7.2	1948	7.7	2075	8.2	2194	8.7	2305	9.1
2250	1925	7.6	2050	8.1	2172	8.6	2286	9.0	2394	9.5
2400	2037	8.1	2154	8.5	2270	9.0	2381	9.4	2485	9.8
2550	2150	8.5	2261	8.9	2370	9.4	2477	9.8	—	—
2700	2265	9.0	2368	9.4	2472	9.8	—	—	—	—
2850	2379	9.4	2477	9.8	—	—	—	—	—	—
3000	2495	9.9	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	2239	8.8	2340	9.2	2436	9.6	2527	10.0	—	—
1950	2323	9.2	2422	9.6	2516	9.9	—	—	—	—
2100	2408	9.5	2505	9.9	—	—	—	—	—	—
2250	2495	9.9	—	—	—	—	—	—	—	—
2400	—	—	—	—	—	—	—	—	—	—
2550	—	—	—	—	—	—	—	—	—	—
2700	—	—	—	—	—	—	—	—	—	—
2850	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

Medium Static 1596-2530 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFM07 THREE PHASE – HIGH STATIC — 6 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	1596	5.6	1749	6.2	1889	6.7	2015	7.1	2131	7.5
1950	1704	6.0	1847	6.5	1981	7.0	2104	7.4	2217	7.8
2100	1814	6.4	1948	6.9	2075	7.3	2194	7.7	2305	8.1
2250	1925	6.8	2050	7.2	2172	7.7	2286	8.1	2394	8.4
2400	2037	7.2	2154	7.6	2270	8.0	2381	8.4	2485	8.8
2550	2150	7.6	2261	8.0	2370	8.4	2477	8.7	2578	9.1
2700	2265	8.0	2368	8.3	2472	8.7	2574	9.1	2672	9.4
2850	2379	8.4	2477	8.7	2576	9.1	2674	9.4	2768	9.8
3000	2495	8.8	2587	9.1	2681	9.5	2775	9.8	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	2239	7.9	2340	8.3	2436	8.6	2527	8.9	2615	9.2
1950	2323	8.2	2422	8.5	2516	8.9	2605	9.2	2691	9.5
2100	2408	8.5	2505	8.8	2597	9.2	2685	9.5	2770	9.8
2250	2495	8.8	2590	9.1	2681	9.5	2767	9.8	—	—
2400	2584	9.1	2677	9.4	2766	9.8	—	—	—	—
2550	2674	9.4	2766	9.8	—	—	—	—	—	—
2700	2766	9.8	—	—	—	—	—	—	—	—
2850	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

High Static 1596-2836 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEA04 SINGLE PHASE — 3 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1079	0.09	1315	0.16	1510	0.24	1679	0.33	1830	0.43
975	1126	0.10	1355	0.17	1546	0.26	1713	0.35	1863	0.45
1050	1175	0.11	1396	0.19	1584	0.28	1749	0.37	1897	0.48
1125	1226	0.13	1438	0.21	1622	0.30	1785	0.40	1932	0.50
1200	1278	0.15	1482	0.23	1662	0.32	1822	0.42	1968	0.53
1275	1331	0.16	1528	0.25	1703	0.34	1861	0.45	2004	0.56
1350	1386	0.19	1575	0.27	1746	0.37	1900	0.48	2042	0.59
1425	1441	0.21	1623	0.30	1789	0.40	1941	0.51	2080	0.63
1500	1498	0.23	1672	0.33	1834	0.43	1982	0.54	2119	0.66

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1968	0.53	2096	0.64	2215	0.76	2328	0.88	2434	1.00
975	2000	0.56	2127	0.67	2246	0.79	2358	0.91	2464	1.04
1050	2033	0.59	2159	0.70	2277	0.82	2389	0.95	—	—
1125	2067	0.61	2192	0.73	2309	0.86	2420	0.99	—	—
1200	2101	0.65	2225	0.77	2342	0.89	2452	1.03	—	—
1275	2136	0.68	2260	0.80	2376	0.93	2485	1.07	—	—
1350	2172	0.71	2295	0.84	2410	0.97	—	—	—	—
1425	2209	0.75	2330	0.88	2445	1.02	—	—	—	—
1500	2247	0.79	2367	0.92	2480	1.06	—	—	—	—

Standard Static 1079-1890 RPM, 0.44 Max BHP

Medium Static 1079-2190 RPM, 0.71 Max BHP

High Static 1079-2490 RPM, 1.07 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEA04 SINGLE PHASE – STANDARD STATIC — 3 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1079	5.7	1315	7.0	1510	8.0	1679	8.9	1830	9.7
975	1126	6.0	1355	7.2	1546	8.2	1713	9.1	—	—
1050	1175	6.2	1396	7.4	1584	8.4	1749	9.3	—	—
1125	1226	6.5	1438	7.6	1622	8.6	1785	9.4	—	—
1200	1278	6.8	1482	7.8	1662	8.8	1822	9.6	—	—
1275	1331	7.0	1528	8.1	1703	9.0	—	—	—	—
1350	1386	7.3	1575	8.3	1746	9.2	—	—	—	—
1425	1441	7.6	1623	8.6	1789	9.5	—	—	—	—
1500	1498	7.9	1672	8.8	1834	9.7	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	—	—	—	—	—	—	—	—	—	—
975	—	—	—	—	—	—	—	—	—	—
1050	—	—	—	—	—	—	—	—	—	—
1125	—	—	—	—	—	—	—	—	—	—
1200	—	—	—	—	—	—	—	—	—	—
1275	—	—	—	—	—	—	—	—	—	—
1350	—	—	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard Static 1079-1890 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCEA04 SINGLE PHASE – MEDIUM STATIC — 3 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1079	4.9	1315	6.0	1510	6.9	1679	7.7	1830	8.4
975	1126	5.1	1355	6.2	1546	7.1	1713	7.8	1863	8.5
1050	1175	5.4	1396	6.4	1584	7.2	1749	8.0	1897	8.7
1125	1226	5.6	1438	6.6	1622	7.4	1785	8.2	1932	8.8
1200	1278	5.8	1482	6.8	1662	7.6	1822	8.3	1968	9.0
1275	1331	6.1	1528	7.0	1703	7.8	1861	8.5	2004	9.2
1350	1386	6.3	1575	7.2	1746	8.0	1900	8.7	2042	9.3
1425	1441	6.6	1623	7.4	1789	8.2	1941	8.9	2080	9.5
1500	1498	6.8	1672	7.6	1834	8.4	1982	9.1	2119	9.7

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1968	9.0	2096	9.6	—	—	—	—	—	—
975	2000	9.1	2127	9.7	—	—	—	—	—	—
1050	2033	9.3	2159	9.9	—	—	—	—	—	—
1125	2067	9.4	—	—	—	—	—	—	—	—
1200	2101	9.6	—	—	—	—	—	—	—	—
1275	2136	9.8	—	—	—	—	—	—	—	—
1350	2172	9.9	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Medium Static 1079-2190 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEA04 SINGLE PHASE – HIGH STATIC — 3 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1079	4.3	1315	5.3	1510	6.1	1679	6.7	1830	7.3
975	1126	4.5	1355	5.4	1546	6.2	1713	6.9	1863	7.5
1050	1175	4.7	1396	5.6	1584	6.4	1749	7.0	1897	7.6
1125	1226	4.9	1438	5.8	1622	6.5	1785	7.2	1932	7.8
1200	1278	5.1	1482	6.0	1662	6.7	1822	7.3	1968	7.9
1275	1331	5.3	1528	6.1	1703	6.8	1861	7.5	2004	8.0
1350	1386	5.6	1575	6.3	1746	7.0	1900	7.6	2042	8.2
1425	1441	5.8	1623	6.5	1789	7.2	1941	7.8	2080	8.4
1500	1498	6.0	1672	6.7	1834	7.4	1982	8.0	2119	8.5

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1968	7.9	2096	8.4	2215	8.9	2328	9.3	2434	9.8
975	2000	8.0	2127	8.5	2246	9.0	2358	9.5	2464	9.9
1050	2033	8.2	2159	8.7	2277	9.1	2389	9.6	—	—
1125	2067	8.3	2192	8.8	2309	9.3	2420	9.7	—	—
1200	2101	8.4	2225	8.9	2342	9.4	2452	9.8	—	—
1275	2136	8.6	2260	9.1	2376	9.5	2485	10.0	—	—
1350	2172	8.7	2295	9.2	2410	9.7	—	—	—	—
1425	2209	8.9	2330	9.4	2445	9.8	—	—	—	—
1500	2247	9.0	2367	9.5	2480	10.0	—	—	—	—

High Static 1079-2490 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEA04 THREE PHASE — 3 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1079	0.09	1315	0.16	1510	0.24	1679	0.33	1830	0.43
975	1126	0.10	1355	0.17	1546	0.26	1713	0.35	1863	0.45
1050	1175	0.11	1396	0.19	1584	0.28	1749	0.37	1897	0.48
1125	1226	0.13	1438	0.21	1622	0.30	1785	0.40	1932	0.50
1200	1278	0.15	1482	0.23	1662	0.32	1822	0.42	1968	0.53
1275	1331	0.16	1528	0.25	1703	0.34	1861	0.45	2004	0.56
1350	1386	0.19	1575	0.27	1746	0.37	1900	0.48	2042	0.59
1425	1441	0.21	1623	0.30	1789	0.40	1941	0.51	2080	0.63
1500	1498	0.23	1672	0.33	1834	0.43	1982	0.54	2119	0.66

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1968	0.53	2096	0.64	2215	0.76	2328	0.88	2434	1.00
975	2000	0.56	2127	0.67	2246	0.79	2358	0.91	2464	1.04
1050	2033	0.59	2159	0.70	2277	0.82	2389	0.95	—	—
1125	2067	0.61	2192	0.73	2309	0.86	2420	0.99	—	—
1200	2101	0.65	2225	0.77	2342	0.89	2452	1.03	—	—
1275	2136	0.68	2260	0.80	2376	0.93	2485	1.07	—	—
1350	2172	0.71	2295	0.84	2410	0.97	—	—	—	—
1425	2209	0.75	2330	0.88	2445	1.02	—	—	—	—
1500	2247	0.79	2367	0.92	2480	1.06	—	—	—	—

Standard Static 1079-1890 RPM, 0.44 Max BHP

Medium Static 1079-2190 RPM, 0.71 Max BHP

High Static 1079-2490 RPM, 1.07 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEA04 THREE PHASE – STANDARD STATIC — 3 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1079	5.7	1315	7.0	1510	8.0	1679	8.9	1830	9.7
975	1126	6.0	1355	7.2	1546	8.2	1713	9.1	—	—
1050	1175	6.2	1396	7.4	1584	8.4	1749	9.3	—	—
1125	1226	6.5	1438	7.6	1622	8.6	1785	9.4	—	—
1200	1278	6.8	1482	7.8	1662	8.8	1822	9.6	—	—
1275	1331	7.0	1528	8.1	1703	9.0	—	—	—	—
1350	1386	7.3	1575	8.3	1746	9.2	—	—	—	—
1425	1441	7.6	1623	8.6	1789	9.5	—	—	—	—
1500	1498	7.9	1672	8.8	1834	9.7	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	—	—	—	—	—	—	—	—	—	—
975	—	—	—	—	—	—	—	—	—	—
1050	—	—	—	—	—	—	—	—	—	—
1125	—	—	—	—	—	—	—	—	—	—
1200	—	—	—	—	—	—	—	—	—	—
1275	—	—	—	—	—	—	—	—	—	—
1350	—	—	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard Static 1079-1890 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCEA04 THREE PHASE – MEDIUM STATIC — 3 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1079	4.9	1315	6.0	1510	6.9	1679	7.7	1830	8.4
975	1126	5.1	1355	6.2	1546	7.1	1713	7.8	1863	8.5
1050	1175	5.4	1396	6.4	1584	7.2	1749	8.0	1897	8.7
1125	1226	5.6	1438	6.6	1622	7.4	1785	8.2	1932	8.8
1200	1278	5.8	1482	6.8	1662	7.6	1822	8.3	1968	9.0
1275	1331	6.1	1528	7.0	1703	7.8	1861	8.5	2004	9.2
1350	1386	6.3	1575	7.2	1746	8.0	1900	8.7	2042	9.3
1425	1441	6.6	1623	7.4	1789	8.2	1941	8.9	2080	9.5
1500	1498	6.8	1672	7.6	1834	8.4	1982	9.1	2119	9.7

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1968	9.0	2096	9.6	—	—	—	—	—	—
975	2000	9.1	2127	9.7	—	—	—	—	—	—
1050	2033	9.3	2159	9.9	—	—	—	—	—	—
1125	2067	9.4	—	—	—	—	—	—	—	—
1200	2101	9.6	—	—	—	—	—	—	—	—
1275	2136	9.8	—	—	—	—	—	—	—	—
1350	2172	9.9	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Medium Static 1079-2190 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEA04 THREE PHASE – HIGH STATIC — 3 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1079	4.3	1315	5.3	1510	6.1	1679	6.7	1830	7.3
975	1126	4.5	1355	5.4	1546	6.2	1713	6.9	1863	7.5
1050	1175	4.7	1396	5.6	1584	6.4	1749	7.0	1897	7.6
1125	1226	4.9	1438	5.8	1622	6.5	1785	7.2	1932	7.8
1200	1278	5.1	1482	6.0	1662	6.7	1822	7.3	1968	7.9
1275	1331	5.3	1528	6.1	1703	6.8	1861	7.5	2004	8.0
1350	1386	5.6	1575	6.3	1746	7.0	1900	7.6	2042	8.2
1425	1441	5.8	1623	6.5	1789	7.2	1941	7.8	2080	8.4
1500	1498	6.0	1672	6.7	1834	7.4	1982	8.0	2119	8.5

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1968	7.9	2096	8.4	2215	8.9	2328	9.3	2434	9.8
975	2000	8.0	2127	8.5	2246	9.0	2358	9.5	2464	9.9
1050	2033	8.2	2159	8.7	2277	9.1	2389	9.6	—	—
1125	2067	8.3	2192	8.8	2309	9.3	2420	9.7	—	—
1200	2101	8.4	2225	8.9	2342	9.4	2452	9.8	—	—
1275	2136	8.6	2260	9.1	2376	9.5	2485	10.0	—	—
1350	2172	8.7	2295	9.2	2410	9.7	—	—	—	—
1425	2209	8.9	2330	9.4	2445	9.8	—	—	—	—
1500	2247	9.0	2367	9.5	2480	10.0	—	—	—	—

High Static 1079-2490 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA05 SINGLE PHASE — 4 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1217	0.19	1411	0.30	1576	0.42	1722	0.55	1855	0.68
1300	1283	0.23	1470	0.34	1631	0.46	1774	0.60	1904	0.74
1400	1351	0.26	1531	0.38	1688	0.51	1827	0.65	1955	0.80
1500	1420	0.31	1593	0.43	1746	0.57	1883	0.71	2008	0.86
1600	1491	0.35	1657	0.48	1805	0.63	1939	0.78	2062	0.93
1700	1563	0.41	1722	0.54	1866	0.69	1997	0.85	2118	1.01
1800	1635	0.46	1789	0.61	1928	0.76	2056	0.92	2174	1.09
1900	1709	0.53	1856	0.68	1991	0.84	2116	1.01	2232	1.18
2000	1784	0.60	1925	0.76	2056	0.92	2178	1.10	2291	1.28

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1979	0.83	2094	0.98	2204	1.15	2308	1.32	2409	1.50
1300	2025	0.89	2138	1.05	2246	1.21	2349	1.39	2447	1.57
1400	2074	0.95	2185	1.11	2291	1.28	2391	1.46	—	—
1500	2124	1.02	2234	1.19	2338	1.36	2436	1.54	—	—
1600	2176	1.10	2284	1.27	2386	1.45	—	—	—	—
1700	2230	1.18	2336	1.36	2436	1.54	—	—	—	—
1800	2285	1.27	2389	1.45	—	—	—	—	—	—
1900	2341	1.36	2444	1.55	—	—	—	—	—	—
2000	2398	1.46	—	—	—	—	—	—	—	—

Standard Static 1217-1990 RPM, 0.72 Max BHP

Medium Static 1217-2170 RPM, 1.06 Max BHP

High Static 1217-2460 RPM, 1.53 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA05 SINGLE PHASE – STANDARD STATIC — 4 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1217	6.4	1411	7.4	1576	8.3	1722	9.1	1855	9.8
1300	1283	6.8	1470	7.7	1631	8.6	1774	9.3	—	—
1400	1351	7.1	1531	8.1	1688	8.9	1827	9.6	—	—
1500	1420	7.5	1593	8.4	1746	9.2	1883	9.9	—	—
1600	1491	7.8	1657	8.7	1805	9.5	—	—	—	—
1700	1563	8.2	1722	9.1	1866	9.8	—	—	—	—
1800	1635	8.6	1789	9.4	—	—	—	—	—	—
1900	1709	9.0	1856	9.8	—	—	—	—	—	—
2000	1784	9.4	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	—	—	—	—	—	—	—	—	—	—
1300	—	—	—	—	—	—	—	—	—	—
1400	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Standard Static 1217-1990 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCFA05 SINGLE PHASE – MEDIUM STATIC — 4 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1217	5.6	1411	6.5	1576	7.3	1722	7.9	1855	8.5
1300	1283	5.9	1470	6.8	1631	7.5	1774	8.2	1904	8.8
1400	1351	6.2	1531	7.1	1688	7.8	1827	8.4	1955	9.0
1500	1420	6.5	1593	7.3	1746	8.0	1883	8.7	2008	9.3
1600	1491	6.9	1657	7.6	1805	8.3	1939	8.9	2062	9.5
1700	1563	7.2	1722	7.9	1866	8.6	1997	9.2	2118	9.8
1800	1635	7.5	1789	8.2	1928	8.9	2056	9.5	—	—
1900	1709	7.9	1856	8.6	1991	9.2	2116	9.8	—	—
2000	1784	8.2	1925	8.9	2056	9.5	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1979	9.1	2094	9.6	—	—	—	—	—	—
1300	2025	9.3	2138	9.9	—	—	—	—	—	—
1400	2074	9.6	—	—	—	—	—	—	—	—
1500	2124	9.8	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Medium Static 1217-2170 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA05 SINGLE PHASE – HIGH STATIC — 4 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1217	4.9	1411	5.7	1576	6.4	1722	7.0	1855	7.5
1300	1283	5.2	1470	6.0	1631	6.6	1774	7.2	1904	7.7
1400	1351	5.5	1531	6.2	1688	6.9	1827	7.4	1955	7.9
1500	1420	5.8	1593	6.5	1746	7.1	1883	7.7	2008	8.2
1600	1491	6.1	1657	6.7	1805	7.3	1939	7.9	2062	8.4
1700	1563	6.4	1722	7.0	1866	7.6	1997	8.1	2118	8.6
1800	1635	6.6	1789	7.3	1928	7.8	2056	8.4	2174	8.8
1900	1709	6.9	1856	7.5	1991	8.1	2116	8.6	2232	9.1
2000	1784	7.3	1925	7.8	2056	8.4	2178	8.9	2291	9.3

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1979	8.0	2094	8.5	2204	9.0	2308	9.4	2409	9.8
1300	2025	8.2	2138	8.7	2246	9.1	2349	9.5	2447	9.9
1400	2074	8.4	2185	8.9	2291	9.3	2391	9.7	—	—
1500	2124	8.6	2234	9.1	2338	9.5	2436	9.9	—	—
1600	2176	8.8	2284	9.3	2386	9.7	—	—	—	—
1700	2230	9.1	2336	9.5	2436	9.9	—	—	—	—
1800	2285	9.3	2389	9.7	—	—	—	—	—	—
1900	2341	9.5	2444	9.9	—	—	—	—	—	—
2000	2398	9.7	—	—	—	—	—	—	—	—

High Static 1217-2460 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA05 THREE PHASE — 4 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1216	0.19	1411	0.30	1576	0.42	1722	0.55	1855	0.68
1300	1282	0.23	1470	0.34	1631	0.46	1773	0.60	1904	0.74
1400	1351	0.26	1531	0.38	1688	0.51	1827	0.65	1955	0.80
1500	1420	0.31	1593	0.43	1746	0.57	1882	0.71	2008	0.86
1600	1491	0.35	1657	0.48	1806	0.63	1940	0.78	2062	0.93
1700	1563	0.41	1722	0.54	1866	0.69	1997	0.85	2118	1.01
1800	1636	0.47	1788	0.61	1928	0.76	2056	0.92	2175	1.09
1900	1710	0.53	1856	0.68	1991	0.84	2116	1.01	2233	1.18
2000	1784	0.60	1924	0.76	2055	0.92	2178	1.10	2292	1.28

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1978	0.83	2094	0.98	2204	1.15	2308	1.32	2409	1.50
1300	2025	0.89	2138	1.05	2246	1.21	2349	1.39	2447	1.57
1400	2073	0.95	2185	1.11	2291	1.28	2392	1.46	2488	1.64
1500	2124	1.02	2233	1.19	2337	1.36	2437	1.54	2532	1.73
1600	2176	1.10	2284	1.27	2386	1.45	2483	1.63	2577	1.82
1700	2230	1.18	2336	1.36	2436	1.54	2532	1.73	2624	1.92
1800	2285	1.27	2389	1.45	2488	1.64	2582	1.83	—	—
1900	2341	1.36	2443	1.55	2541	1.74	2634	1.94	—	—
2000	2399	1.46	2499	1.66	2595	1.85	—	—	—	—

Standard Static 1216-1900 RPM, 0.72 Max BHP

Medium Static 1216-2170 RPM, 1.06 Max BHP

High Static 1216-2660 RPM, 1.96 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA05 THREE PHASE – STANDARD STATIC — 4 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1216	6.4	1411	7.4	1576	8.3	1722	9.1	1855	9.8
1300	1282	6.7	1470	7.7	1631	8.6	1773	9.3	—	—
1400	1351	7.1	1531	8.1	1688	8.9	1827	9.6	—	—
1500	1420	7.5	1593	8.4	1746	9.2	1882	9.9	—	—
1600	1491	7.8	1657	8.7	1806	9.5	—	—	—	—
1700	1563	8.2	1722	9.1	1866	9.8	—	—	—	—
1800	1636	8.6	1788	9.4	—	—	—	—	—	—
1900	1710	9.0	1856	9.8	—	—	—	—	—	—
2000	1784	9.4	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	—	—	—	—	—	—	—	—	—	—
1300	—	—	—	—	—	—	—	—	—	—
1400	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Standard Static 1216-1900 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCFA05 THREE PHASE – MEDIUM STATIC — 4 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1216	5.6	1411	6.5	1576	7.3	1722	7.9	1855	8.5
1300	1282	5.9	1470	6.8	1631	7.5	1773	8.2	1904	8.8
1400	1351	6.2	1531	7.1	1688	7.8	1827	8.4	1955	9.0
1500	1420	6.5	1593	7.3	1746	8.0	1882	8.7	2008	9.3
1600	1491	6.9	1657	7.6	1806	8.3	1940	8.9	2062	9.5
1700	1563	7.2	1722	7.9	1866	8.6	1997	9.2	2118	9.8
1800	1636	7.5	1788	8.2	1928	8.9	2056	9.5	—	—
1900	1710	7.9	1856	8.6	1991	9.2	2116	9.8	—	—
2000	1784	8.2	1924	8.9	2055	9.5	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1978	9.1	2094	9.6	—	—	—	—	—	—
1300	2025	9.3	2139	9.9	—	—	—	—	—	—
1400	2073	9.6	—	—	—	—	—	—	—	—
1500	2124	9.8	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Medium Static 1216-2170 RPM,

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA05 THREE PHASE – HIGH STATIC — 4 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1216	4.6	1411	5.3	1576	5.9	1722	6.5	1855	7.0
1300	1282	4.8	1470	5.5	1631	6.1	1773	6.7	1904	7.2
1400	1351	5.1	1531	5.8	1688	6.3	1827	6.9	1955	7.3
1500	1420	5.3	1593	6.0	1746	6.6	1882	7.1	2008	7.5
1600	1491	5.6	1657	6.2	1806	6.8	1940	7.3	2062	7.8
1700	1563	5.9	1722	6.5	1866	7.0	1997	7.5	2118	8.0
1800	1636	6.2	1788	6.7	1928	7.2	2056	7.7	2175	8.2
1900	1710	6.4	1856	7.0	1991	7.5	2116	8.0	2233	8.4
2000	1784	6.7	1924	7.2	2055	7.7	2178	8.2	2292	8.6

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1978	7.4	2094	7.9	2204	8.3	2308	8.7	2409	9.1
1300	2025	7.6	2139	8.0	2246	8.4	2349	8.8	2447	9.2
1400	2073	7.8	2185	8.2	2291	8.6	2392	9.0	2488	9.4
1500	2124	8.0	2233	8.4	2337	8.8	2437	9.2	2532	9.5
1600	2176	8.2	2284	8.6	2386	9.0	2483	9.3	2577	9.7
1700	2230	8.4	2336	8.8	2436	9.2	2532	9.5	2624	9.9
1800	2285	8.6	2389	9.0	2488	9.4	2582	9.7	—	—
1900	2341	8.8	2443	9.2	2541	9.6	2634	9.9	—	—
2000	2399	9.0	2499	9.4	2595	9.8	—	—	—	—

High Static 1216-2660 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA06 SINGLE PHASE — 5 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	1420	0.31	1593	0.43	1746	0.57	1883	0.71	2008	0.86
1625	1509	0.37	1673	0.50	1820	0.64	1954	0.79	2076	0.95
1750	1599	0.43	1755	0.57	1897	0.73	2026	0.88	2146	1.05
1875	1691	0.51	1839	0.66	1975	0.82	2101	0.98	2218	1.16
2000	1784	0.60	1925	0.76	2056	0.92	2178	1.10	2291	1.28
2125	1878	0.70	2011	0.86	2138	1.04	2255	1.22	2367	1.41
2250	1974	0.81	2100	0.98	2221	1.16	2335	1.35	—	—
2375	2070	0.94	2189	1.11	2305	1.30	—	—	—	—
2500	2166	1.08	2280	1.25	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	2124	1.02	2234	1.19	2338	1.36	—	—	—	—
1625	2190	1.12	2297	1.29	—	—	—	—	—	—
1750	2257	1.22	2362	1.40	—	—	—	—	—	—
1875	2327	1.34	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard Static 1420-2150 RPM, 1.06 Max BHP

Medium Static 1420-2390 RPM, 1.44 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA06 SINGLE PHASE – STANDARD STATIC — 5 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1420	6.6	1593	7.4	1746	8.1	1883	8.8	2008	9.3
1625	1509	7.0	1673	7.8	1820	8.5	1954	9.1	2076	9.7
1750	1599	7.4	1755	8.2	1897	8.8	2026	9.4	2146	10.0
1875	1691	7.9	1839	8.6	1975	9.2	2101	9.8	—	—
2000	1784	8.3	1925	9.0	2056	9.6	—	—	—	—
2125	1878	8.7	2011	9.4	2138	9.9	—	—	—	—
2250	1974	9.2	2100	9.8	—	—	—	—	—	—
2375	2070	9.6	—	—	—	—	—	—	—	—
2500	–	–	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2124	9.9	—	—	—	—	—	—	—	—
1625	—	—	—	—	—	—	—	—	—	—
1750	—	—	—	—	—	—	—	—	—	—
1875	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard Static 1420-2150 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCFA06 SINGLE PHASE – MEDIUM STATIC — 5 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1420	5.9	1593	6.7	1746	7.3	1883	7.9	2008	8.4
1625	1509	6.3	1673	7.0	1820	7.6	1954	8.2	2076	8.7
1750	1599	6.7	1755	7.3	1897	7.9	2026	8.5	2146	9.0
1875	1691	7.1	1839	7.7	1975	8.3	2101	8.8	2218	9.3
2000	1784	7.5	1925	8.1	2056	8.6	2178	9.1	2291	9.6
2125	1878	7.9	2011	8.4	2138	8.9	2255	9.4	2367	9.9
2250	1974	8.3	2100	8.8	2221	9.3	2335	9.8	—	—
2375	2070	8.7	2189	9.2	2305	9.6	—	—	—	—
2500	2166	9.1	2280	9.5	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2124	8.9	2234	9.3	2338	9.8	—	—	—	—
1625	2190	9.2	2297	9.6	—	—	—	—	—	—
1750	2257	9.4	2362	9.9	—	—	—	—	—	—
1875	2327	9.7	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Medium Static 1420-2390 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA06 THREE PHASE — 5 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	1420	0.31	1593	0.43	1746	0.57	1883	0.71	2008	0.86
1625	1509	0.37	1673	0.50	1820	0.64	1954	0.79	2076	0.95
1750	1599	0.43	1755	0.57	1897	0.73	2026	0.88	2146	1.05
1875	1691	0.51	1839	0.66	1976	0.82	2102	0.99	2218	1.16
2000	1784	0.60	1924	0.76	2056	0.92	2178	1.10	2291	1.28
2125	1879	0.70	2011	0.86	2137	1.03	2256	1.22	2367	1.41
2250	1974	0.81	2099	0.98	2221	1.16	2335	1.35	2444	1.55
2375	2070	0.94	2189	1.11	2305	1.30	2416	1.49	2522	1.70
2500	2166	1.08	2280	1.25	2391	1.45	2499	1.65	2601	1.86

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	2124	1.02	2233	1.19	2337	1.36	2436	1.54	2532	1.73
1625	2190	1.12	2296	1.29	2398	1.47	2495	1.65	2589	1.85
1750	2257	1.22	2362	1.40	2462	1.59	2557	1.78	2648	1.97
1875	2327	1.34	2430	1.52	2528	1.72	2621	1.91	2710	2.11
2000	2398	1.46	2499	1.66	2595	1.85	2687	2.06	2775	2.27
2125	2471	1.60	2570	1.80	2665	2.01	2755	2.22	—	—
2250	2546	1.75	2643	1.96	2735	2.17	2824	2.39	—	—
2375	2622	1.91	2717	2.12	2807	2.34	—	—	—	—
2500	2699	2.08	2792	2.30	—	—	—	—	—	—

Standard Static 1420-2150 RPM, 1.06 Max BHP

Medium Static 1420-2390 RPM, 1.44 Max BHP

High Static 1420-2836 RPM, 2.43 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA06 THREE PHASE – STANDARD STATIC — 5 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1420	6.6	1593	7.4	1746	8.1	1883	8.8	2008	9.3
1625	1509	7.0	1673	7.8	1820	8.5	1954	9.1	2076	9.7
1750	1599	7.4	1755	8.2	1897	8.8	2026	9.4	2146	10.0
1875	1691	7.9	1839	8.6	1976	9.2	2102	9.8	—	—
2000	1784	8.3	1924	8.9	2056	9.6	—	—	—	—
2125	1878	8.7	2011	9.4	2137	9.9	—	—	—	—
2250	1974	9.2	2099	9.8	—	—	—	—	—	—
2375	2070	9.6	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2124	9.9	—	—	—	—	—	—	—	—
1625	—	—	—	—	—	—	—	—	—	—
1750	—	—	—	—	—	—	—	—	—	—
1875	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard Static 1420-2150 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCFA06 THREE PHASE – MEDIUM STATIC — 5 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1420	5.9	1593	6.7	1746	7.3	1883	7.9	2008	8.4
1625	1509	6.3	1673	7.0	1820	7.6	1954	8.2	2076	8.7
1750	1599	6.7	1755	7.3	1897	7.9	2026	8.5	2146	9.0
1875	1691	7.1	1839	7.7	1976	8.3	2102	8.8	2218	9.3
2000	1784	7.5	1924	8.1	2056	8.6	2178	9.1	2291	9.6
2125	1878	7.9	2011	8.4	2137	8.9	2256	9.4	2367	9.9
2250	1974	8.3	2099	8.8	2221	9.3	2335	9.8	—	—
2375	2070	8.7	2189	9.2	2305	9.6	—	—	—	—
2500	2166	9.1	2280	9.5	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2124	8.9	2233	9.3	2337	9.8	—	—	—	—
1625	2190	9.2	2296	9.6	—	—	—	—	—	—
1750	2257	9.4	2362	9.9	—	—	—	—	—	—
1875	2327	9.7	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Medium Static 1420-2390 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFA06 THREE PHASE – HIGH STATIC — 5 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1420	5.0	1593	5.6	1746	6.2	1883	6.6	2008	7.1
1625	1509	5.3	1673	5.9	1820	6.4	1954	6.9	2076	7.3
1750	1599	5.6	1755	6.2	1897	6.7	2026	7.1	2146	7.6
1875	1691	6.0	1839	6.5	1976	7.0	2102	7.4	2218	7.8
2000	1784	6.3	1924	6.8	2056	7.2	2178	7.7	2291	8.1
2125	1878	6.6	2011	7.1	2137	7.5	2256	8.0	2367	8.3
2250	1974	7.0	2099	7.4	2221	7.8	2335	8.2	2444	8.6
2375	2070	7.3	2189	7.7	2305	8.1	2416	8.5	2522	8.9
2500	2166	7.6	2280	8.0	2391	8.4	2499	8.8	2601	9.2

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2124	7.5	2233	7.9	2337	8.2	2436	8.6	2532	8.9
1625	2190	7.7	2296	8.1	2398	8.5	2495	8.8	2589	9.1
1750	2257	8.0	2362	8.3	2462	8.7	2557	9.0	2648	9.3
1875	2327	8.2	2430	8.6	2528	8.9	2621	9.2	2710	9.6
2000	2398	8.5	2499	8.8	2595	9.2	2687	9.5	2775	9.8
2125	2471	8.7	2570	9.1	2665	9.4	2755	9.7	—	—
2250	2546	9.0	2643	9.3	2735	9.6	2824	10.0	—	—
2375	2622	9.2	2717	9.6	2807	9.9	—	—	—	—
2500	2699	9.5	2792	9.8	—	—	—	—	—	—

High Static 1420-2836 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCFM07 THREE PHASE — 6 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1800	1537	0.38	1685	0.51	1824	0.64	1953	0.79	2071	0.94
1950	1641	0.47	1778	0.59	1911	0.74	2035	0.89	2150	1.05
2100	1748	0.56	1874	0.69	2000	0.84	2119	1.00	2231	1.17
2250	1855	0.67	1973	0.81	2091	0.96	2206	1.13	2314	1.31
2400	1964	0.80	2074	0.94	2185	1.10	2294	1.27	2399	1.45
2550	2074	0.94	2176	1.08	2281	1.25	2385	1.43	2486	1.62
2700	2185	1.10	2281	1.25	2379	1.42	2478	1.60	2575	1.80
2850	2296	1.27	2386	1.43	2479	1.60	2573	1.79	2666	1.99
3000	2408	1.47	2493	1.63	2581	1.81	2670	2.00	2759	2.21

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1800	2182	1.10	2285	1.26	2382	1.43	2476	1.60	2564	1.78
1950	2258	1.21	2359	1.39	2455	1.56	2547	1.74	2634	1.93
2100	2337	1.34	2436	1.52	2530	1.71	2620	1.90	2706	2.09
2250	2417	1.49	2514	1.67	2606	1.86	2695	2.06	2780	2.26
2400	2499	1.64	2594	1.84	2685	2.04	2771	2.24	—	—
2550	2583	1.81	2676	2.02	2765	2.22	—	—	—	—
2700	2669	2.00	2759	2.21	—	—	—	—	—	—
2850	2757	2.20	—	—	—	—	—	—	—	—
3000			—	—	—	—	—	—	—	—

Standard Static 1537-2300 RPM, 1.31 Max BHP

Medium Static 1537-2530 RPM, 1.76 Max BHP

High Static 1537-2836 RPM, 2.43 Max BHP

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEM07 THREE PHASE – STANDARD STATIC — 6 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	1537	6.7	1685	7.3	1824	7.9	1953	8.5	2071	9.0
1950	1641	7.1	1778	7.7	1911	8.3	2035	8.8	2150	9.3
2100	1748	7.6	1874	8.1	2000	8.7	2119	9.2	2231	9.7
2250	1855	8.1	1973	8.6	2091	9.1	2206	9.6	—	—
2400	1964	8.5	2074	9.0	2185	9.5	2294	10.0	—	—
2550	2074	9.0	2176	9.5	2281	9.9	—	—	—	—
2700	2185	9.5	2281	9.9	—	—	—	—	—	—
2850	2296	10.0	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	2182	9.5	2285	9.9	—	—	—	—	—	—
1950	2258	9.8	—	—	—	—	—	—	—	—
2100	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2400	—	—	—	—	—	—	—	—	—	—
2550	—	—	—	—	—	—	—	—	—	—
2700	—	—	—	—	—	—	—	—	—	—
2850	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

Standard Static 1537-2300 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

Fan data (cont)

48FCEM07 THREE PHASE – MEDIUM STATIC — 6 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	1537	6.1	1685	6.7	1824	7.2	1953	7.7	2071	8.2
1950	1641	6.5	1778	7.0	1911	7.6	2035	8.0	2150	8.5
2100	1748	6.9	1874	7.4	2000	7.9	2119	8.4	2231	8.8
2250	1855	7.3	1973	7.8	2091	8.3	2206	8.7	2314	9.1
2400	1964	7.8	2074	8.2	2185	8.6	2294	9.1	2399	9.5
2550	2074	8.2	2176	8.6	2281	9.0	2385	9.4	2486	9.8
2700	2185	8.6	2281	9.0	2379	9.4	2478	9.8	—	—
2850	2296	9.1	2386	9.4	2479	9.8	—	—	—	—
3000	2408	9.5	2493	9.9	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	2182	8.6	2285	9.0	2382	9.4	2476	9.8		
1950	2258	8.9	2359	9.3	2455	9.7	—	—	—	—
2100	2337	9.2	2436	9.6	2530	10.0	—	—	—	—
2250	2417	9.6	2514	9.9	—	—	—	—	—	—
2400	2499	9.9	—	—	—	—	—	—	—	—
2550	—	—	—	—	—	—	—	—	—	—
2700	—	—	—	—	—	—	—	—	—	—
2850	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

Medium Static 1537-2530 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

48FCEM07 THREE PHASE – HIGH STATIC — 6 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	1537	5.4	1685	5.9	1824	6.4	1953	6.9	2071	7.3
1950	1641	5.8	1778	6.3	1911	6.7	2035	7.2	2150	7.6
2100	1748	6.2	1874	6.6	2000	7.1	2119	7.5	2231	7.9
2250	1855	6.5	1973	7.0	2091	7.4	2206	7.8	2314	8.2
2400	1964	6.9	2074	7.3	2185	7.7	2294	8.1	2399	8.5
2550	2074	7.3	2176	7.7	2281	8.0	2385	8.4	2486	8.8
2700	2185	7.7	2281	8.0	2379	8.4	2478	8.7	2575	9.1
2850	2296	8.1	2386	8.4	2479	8.7	2573	9.1	2666	9.4
3000	2408	8.5	2493	8.8	2581	9.1	2670	9.4	2759	9.7

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	2182	7.7	2285	8.1	2382	8.4	2476	8.7	2564	9.0
1950	2258	8.0	2359	8.3	2455	8.7	2547	9.0	2634	9.3
2100	2337	8.2	2436	8.6	2530	8.9	2620	9.2	2706	9.5
2250	2417	8.5	2514	8.9	2606	9.2	2695	9.5	2780	9.8
2400	2499	8.8	2594	9.1	2685	9.5	2771	9.8	—	—
2550	2583	9.1	2676	9.4	2765	9.7	—	—	—	—
2700	2669	9.4	2759	9.7	—	—	—	—	—	—
2850	2757	9.7	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

High Static 1537-2836 RPM

NOTE: Fan tables include highest gas heat. Utilize static pressure deduction tables for lower gas heat capacities.

50FC-A04 SINGLE PHASE — 3 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1040	0.08	1307	0.16	1526	0.25	1705	0.35	1859	0.45
975	1082	0.09	1336	0.17	1554	0.26	1736	0.36	1892	0.47
1050	1127	0.10	1366	0.18	1582	0.28	1766	0.38	1925	0.50
1125	1175	0.11	1398	0.19	1609	0.29	1795	0.40	1956	0.52
1200	1225	0.13	1434	0.21	1638	0.31	1822	0.42	1984	0.54
1275	1277	0.15	1472	0.22	1667	0.32	1849	0.44	2012	0.57
1350	1330	0.16	1514	0.24	1699	0.34	1878	0.46	2040	0.59
1425	1385	0.19	1557	0.26	1734	0.36	1906	0.48	2068	0.62
1500	1440	0.21	1603	0.29	1771	0.39	1937	0.51	2095	0.64

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1995	0.55	2119	0.66	2234	0.78	2342	0.89	2444	1.02
975	2031	0.58	2156	0.70	2272	0.82	2380	0.94	2482	1.06
1050	2065	0.61	2192	0.73	2309	0.86	2418	0.98	—	—
1125	2098	0.64	2226	0.77	2345	0.90	2454	1.03	—	—
1200	2129	0.67	2259	0.80	2379	0.94	2490	1.07	—	—
1275	2159	0.70	2291	0.84	2412	0.98	—	—	—	—
1350	2187	0.73	2321	0.87	2444	1.02	—	—	—	—
1425	2215	0.76	2350	0.90	2474	1.05	—	—	—	—
1500	2242	0.78	2378	0.94	—	—	—	—	—	—

Standard Static 1040-1890 RPM, 0.44 Max BHP

Medium Static 1040-2190 RPM, 0.71 Max BHP

High Static 1040-2490 RPM, 1.07 Max BHP

50FC-A04 SINGLE PHASE – STANDARD STATIC — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1040	5.5	1307	6.9	1526	8.1	1705	9.0	—	—
975	1082	5.7	1336	7.1	1554	8.2	1736	9.2	—	—
1050	1127	6.0	1366	7.2	1582	8.4	1766	9.3	—	—
1125	1175	6.2	1398	7.4	1609	8.5	1795	9.5	—	—
1200	1225	6.5	1434	7.6	1638	8.7	1822	9.6	—	—
1275	1277	6.8	1472	7.8	1667	8.8	1849	9.8	—	—
1350	1330	7.0	1514	8.0	1699	9.0	—	—	—	—
1425	1385	7.3	1557	8.2	1734	9.2	—	—	—	—
1500	1440	7.6	1603	8.5	1771	9.4	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	—	—	—	—	—	—	—	—	—	—
975	—	—	—	—	—	—	—	—	—	—
1050	—	—	—	—	—	—	—	—	—	—
1125	—	—	—	—	—	—	—	—	—	—
1200	—	—	—	—	—	—	—	—	—	—
1275	—	—	—	—	—	—	—	—	—	—
1350	—	—	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard Static 1040-1890 RPM

Fan data (cont)

50FC-A04 SINGLE PHASE – MEDIUM STATIC — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1040	4.7	1307	6.0	1526	7.0	1705	7.8	1859	8.5
975	1082	4.9	1336	6.1	1554	7.1	1736	7.9	1892	8.6
1050	1127	5.1	1366	6.2	1582	7.2	1766	8.1	1925	8.8
1125	1175	5.4	1398	6.4	1609	7.3	1795	8.2	1956	8.9
1200	1225	5.6	1434	6.5	1638	7.5	1822	8.3	1984	9.1
1275	1277	5.8	1472	6.7	1667	7.6	1849	8.4	2012	9.2
1350	1330	6.1	1514	6.9	1699	7.8	1878	8.6	2040	9.3
1425	1385	6.3	1557	7.1	1734	7.9	1906	8.7	2068	9.4
1500	1440	6.6	1603	7.3	1771	8.1	1937	8.8	2095	9.6

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1995	9.1	2119	9.7	—	—	—	—	—	—
975	2031	9.3	2156	9.8	—	—	—	—	—	—
1050	2065	9.4	—	—	—	—	—	—	—	—
1125	2098	9.6	—	—	—	—	—	—	—	—
1200	2129	9.7	—	—	—	—	—	—	—	—
1275	2159	9.9	—	—	—	—	—	—	—	—
1350	2187	10.0	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Medium Static 1040-2190 RPM

50FC-A04 SINGLE PHASE – HIGH STATIC — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1040	4.2	1307	5.2	1526	6.1	1705	6.8	1859	7.5
975	1082	4.3	1336	5.4	1554	6.2	1736	7.0	1892	7.6
1050	1127	4.5	1366	5.5	1582	6.4	1766	7.1	1925	7.7
1125	1175	4.7	1398	5.6	1609	6.5	1795	7.2	1956	7.9
1200	1225	4.9	1434	5.8	1638	6.6	1822	7.3	1984	8.0
1275	1277	5.1	1472	5.9	1667	6.7	1849	7.4	2012	8.1
1350	1330	5.3	1514	6.1	1699	6.8	1878	7.5	2040	8.2
1425	1385	5.6	1557	6.3	1734	7.0	1906	7.7	2068	8.3
1500	1440	5.8	1603	6.4	1771	7.1	1937	7.8	2095	8.4

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1995	8.0	2119	8.5	2234	9.0	2342	9.4	2444	9.8
975	2031	8.2	2156	8.7	2272	9.1	2380	9.6	2482	10.0
1050	2065	8.3	2192	8.8	2309	9.3	2418	9.7	—	—
1125	2098	8.4	2226	8.9	2345	9.4	2454	9.9	—	—
1200	2129	8.6	2259	9.1	2379	9.6	2490	10.0	—	—
1275	2159	8.7	2291	9.2	2412	9.7	—	—	—	—
1350	2187	8.8	2321	9.3	2444	9.8	—	—	—	—
1425	2215	8.9	2350	9.4	2474	9.9	—	—	—	—
1500	2242	9.0	2378	9.6	—	—	—	—	—	—

High Static 1040-2490 RPM

50FC-A04 THREE PHASE — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1040	0.08	1307	0.16	1526	0.25	1705	0.35	1859	0.45
975	1082	0.09	1336	0.17	1554	0.26	1736	0.36	1892	0.47
1050	1127	0.10	1366	0.18	1582	0.28	1766	0.38	1925	0.50
1125	1175	0.11	1398	0.19	1609	0.29	1795	0.40	1956	0.52
1200	1225	0.13	1434	0.21	1638	0.31	1822	0.42	1984	0.54
1275	1277	0.15	1472	0.22	1667	0.32	1849	0.44	2012	0.57
1350	1330	0.16	1514	0.24	1699	0.34	1878	0.46	2040	0.59
1425	1385	0.19	1557	0.26	1734	0.36	1906	0.48	2068	0.62
1500	1440	0.21	1603	0.29	1771	0.39	1937	0.51	2095	0.64

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1995	0.55	2119	0.66	2234	0.78	2342	0.89	2444	1.02
975	2031	0.58	2156	0.70	2272	0.82	2380	0.94	2482	1.06
1050	2065	0.61	2192	0.73	2309	0.86	2418	0.98	—	—
1125	2098	0.64	2226	0.77	2345	0.90	2454	1.03	—	—
1200	2129	0.67	2259	0.80	2379	0.94	2490	1.07	—	—
1275	2159	0.70	2291	0.84	2412	0.98	—	—	—	—
1350	2187	0.73	2321	0.87	2444	1.02	—	—	—	—
1425	2215	0.76	2350	0.90	2474	1.05	—	—	—	—
1500	2242	0.78	2378	0.94	—	—	—	—	—	—

Standard Static 1040-1890 RPM, 0.44 Max BHP

Medium Static 1040-2190 RPM, 0.71 Max BHP

High Static 1040-2490 RPM, 1.07 Max BHP

50FC-A04 THREE PHASE – STANDARD STATIC — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1040	5.5	1307	6.9	1526	8.1	1705	9.0	—	—
975	1082	5.7	1336	7.1	1554	8.2	1736	9.2	—	—
1050	1127	6.0	1366	7.2	1582	8.4	1766	9.3	—	—
1125	1175	6.2	1398	7.4	1609	8.5	1795	9.5	—	—
1200	1225	6.5	1434	7.6	1638	8.7	1822	9.6	—	—
1275	1277	6.8	1472	7.8	1667	8.8	1849	9.8	—	—
1350	1330	7.0	1514	8.0	1699	9.0	—	—	—	—
1425	1385	7.3	1557	8.2	1734	9.2	—	—	—	—
1500	1440	7.6	1603	8.5	1771	9.4	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	—	—	—	—	—	—	—	—	—	—
975	—	—	—	—	—	—	—	—	—	—
1050	—	—	—	—	—	—	—	—	—	—
1125	—	—	—	—	—	—	—	—	—	—
1200	—	—	—	—	—	—	—	—	—	—
1275	—	—	—	—	—	—	—	—	—	—
1350	—	—	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard Static 1040-1890 RPM

Fan data (cont)

50FC-A04 THREE PHASE – MEDIUM STATIC — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1040	4.7	1307	6.0	1526	7.0	1705	7.8	1859	8.5
975	1082	4.9	1336	6.1	1554	7.1	1736	7.9	1892	8.6
1050	1127	5.1	1366	6.2	1582	7.2	1766	8.1	1925	8.8
1125	1175	5.4	1398	6.4	1609	7.3	1795	8.2	1956	8.9
1200	1225	5.6	1434	6.5	1638	7.5	1822	8.3	1984	9.1
1275	1277	5.8	1472	6.7	1667	7.6	1849	8.4	2012	9.2
1350	1330	6.1	1514	6.9	1699	7.8	1878	8.6	2040	9.3
1425	1385	6.3	1557	7.1	1734	7.9	1906	8.7	2068	9.4
1500	1440	6.6	1603	7.3	1771	8.1	1937	8.8	2095	9.6

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1995	9.1	2119	9.7	—	—	—	—	—	—
975	2031	9.3	2156	9.8	—	—	—	—	—	—
1050	2065	9.4	—	—	—	—	—	—	—	—
1125	2098	9.6	—	—	—	—	—	—	—	—
1200	2129	9.7	—	—	—	—	—	—	—	—
1275	2159	9.9	—	—	—	—	—	—	—	—
1350	2187	10.0	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Medium Static 1040-2190 RPM

50FC-A04 THREE PHASE – HIGH STATIC — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1040	4.2	1307	5.2	1526	6.1	1705	6.8	1859	7.5
975	1082	4.3	1336	5.4	1554	6.2	1736	7.0	1892	7.6
1050	1127	4.5	1366	5.5	1582	6.4	1766	7.1	1925	7.7
1125	1175	4.7	1398	5.6	1609	6.5	1795	7.2	1956	7.9
1200	1225	4.9	1434	5.8	1638	6.6	1822	7.3	1984	8.0
1275	1277	5.1	1472	5.9	1667	6.7	1849	7.4	2012	8.1
1350	1330	5.3	1514	6.1	1699	6.8	1878	7.5	2040	8.2
1425	1385	5.6	1557	6.3	1734	7.0	1906	7.7	2068	8.3
1500	1440	5.8	1603	6.4	1771	7.1	1937	7.8	2095	8.4

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1995	8.0	2119	8.5	2234	9.0	2342	9.4	2444	9.8
975	2031	8.2	2156	8.7	2272	9.1	2380	9.6	2482	10.0
1050	2065	8.3	2192	8.8	2309	9.3	2418	9.7	—	—
1125	2098	8.4	2226	8.9	2345	9.4	2454	9.9	—	—
1200	2129	8.6	2259	9.1	2379	9.6	2490	10.0	—	—
1275	2159	8.7	2291	9.2	2412	9.7	—	—	—	—
1350	2187	8.8	2321	9.3	2444	9.8	—	—	—	—
1425	2215	8.9	2350	9.4	2474	9.9	—	—	—	—
1500	2242	9.0	2378	9.6	—	—	—	—	—	—

High Static 1040-2490 RPM

50FC-A05 SINGLE PHASE — 4 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1120	0.15	1327	0.25	1506	0.37	1667	0.50	1814	0.65
1300	1178	0.18	1375	0.28	1549	0.40	1705	0.54	1849	0.69
1400	1238	0.21	1424	0.31	1593	0.44	1745	0.57	1886	0.73
1500	1300	0.24	1476	0.35	1639	0.47	1788	0.62	1925	0.77
1600	1365	0.27	1530	0.39	1688	0.52	1832	0.66	1966	0.82
1700	1430	0.31	1586	0.43	1737	0.56	1878	0.71	2009	0.87
1800	1497	0.36	1644	0.48	1789	0.61	1925	0.76	2053	0.93
1900	1565	0.41	1703	0.53	1842	0.67	1974	0.82	2099	0.99
2000	1633	0.46	1764	0.59	1897	0.73	2025	0.89	2146	1.05

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1950	0.81	2077	0.97	2195	1.15	2307	1.33	2411	1.52
1300	1983	0.85	2108	1.02	2225	1.19	2336	1.38	2442	1.58
1400	2017	0.89	2140	1.06	2256	1.24	2367	1.43	—	—
1500	2053	0.93	2174	1.11	2289	1.29	2399	1.49	—	—
1600	2092	0.98	2210	1.16	2323	1.35	2431	1.55	—	—
1700	2132	1.04	2248	1.22	2359	1.41	—	—	—	—
1800	2173	1.10	2288	1.28	2397	1.47	—	—	—	—
1900	2217	1.16	2329	1.35	2436	1.54	—	—	—	—
2000	2262	1.23	2372	1.42	—	—	—	—	—	—

Standard Static 1120-1900 RPM, 0.72 Max BHP

Medium Static 1120-2170 RPM, 1.06 Max BHP

High Static 1120-2460 RPM, 1.53 Max BHP

50FC-A05 SINGLE PHASE – STANDARD STATIC — 4 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1120	5.9	1327	7.0	1506	7.9	1667	8.8	1814	9.5
1300	1178	6.2	1375	7.2	1549	8.2	1705	9.0	1849	9.7
1400	1238	6.5	1424	7.5	1593	8.4	1745	9.2	1886	9.9
1500	1300	6.8	1476	7.8	1639	8.6	1788	9.4	—	—
1600	1365	7.2	1530	8.1	1688	8.9	1832	9.6	—	—
1700	1430	7.5	1586	8.3	1737	9.1	1878	9.9	—	—
1800	1497	7.9	1644	8.7	1789	9.4	—	—	—	—
1900	1565	8.2	1703	9.0	1842	9.7	—	—	—	—
2000	1633	8.6	1764	9.3	1897	10.0	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	—	—	—	—	—	—	—	—	—	—
1300	—	—	—	—	—	—	—	—	—	—
1400	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Standard Static 1120-1900 RPM

Fan data (cont)

50FC-A05 SINGLE PHASE – MEDIUM STATIC — 4 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1120	5.2	1327	6.1	1506	6.9	1667	7.7	1814	8.4
1300	1178	5.4	1375	6.3	1549	7.1	1705	7.9	1849	8.5
1400	1238	5.7	1424	6.6	1593	7.3	1745	8.0	1886	8.7
1500	1300	6.0	1476	6.8	1639	7.6	1788	8.2	1925	8.9
1600	1365	6.3	1530	7.1	1688	7.8	1832	8.4	1966	9.1
1700	1430	6.6	1586	7.3	1737	8.0	1878	8.7	2009	9.3
1800	1497	6.9	1644	7.6	1789	8.2	1925	8.9	2053	9.5
1900	1565	7.2	1703	7.8	1842	8.5	1974	9.1	2099	9.7
2000	1633	7.5	1764	8.1	1897	8.7	2025	9.3	2146	9.9

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1950	9.0	2077	9.6	—	—	—	—	—	—
1300	1983	9.1	2108	9.7	—	—	—	—	—	—
1400	2017	9.3	2140	9.9	—	—	—	—	—	—
1500	2053	9.5	—	—	—	—	—	—	—	—
1600	2092	9.6	—	—	—	—	—	—	—	—
1700	2132	9.8	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Medium Static 1120-2170 RPM

50FC-A05 SINGLE PHASE – HIGH STATIC — 4 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1120	4.6	1327	5.4	1506	6.1	1667	6.8	1814	7.4
1300	1178	4.8	1375	5.6	1549	6.3	1705	6.9	1849	7.5
1400	1238	5.0	1424	5.8	1593	6.5	1745	7.1	1886	7.7
1500	1300	5.3	1476	6.0	1639	6.7	1788	7.3	1925	7.8
1600	1365	5.5	1530	6.2	1688	6.9	1832	7.4	1966	8.0
1700	1430	5.8	1586	6.4	1737	7.1	1878	7.6	2009	8.2
1800	1497	6.1	1644	6.7	1789	7.3	1925	7.8	2053	8.3
1900	1565	6.4	1703	6.9	1842	7.5	1974	8.0	2099	8.5
2000	1633	6.6	1764	7.2	1897	7.7	2025	8.2	2146	8.7

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1950	7.9	2077	8.4	2195	8.9	2307	9.4	2411	9.8
1300	1983	8.1	2108	8.6	2225	9.0	2336	9.5	2442	9.9
1400	2017	8.2	2140	8.7	2256	9.2	2367	9.6	—	—
1500	2053	8.3	2174	8.8	2289	9.3	2399	9.8	—	—
1600	2092	8.5	2210	9.0	2323	9.4	2431	9.9	—	—
1700	2132	8.7	2248	9.1	2359	9.6	—	—	—	—
1800	2173	8.8	2288	9.3	2397	9.7	—	—	—	—
1900	2217	9.0	2329	9.5	2436	9.9	—	—	—	—
2000	2262	9.2	2372	9.6	—	—	—	—	—	—

High Static 1120-2460 RPM

50FC-A05 THREE PHASE — 4 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1115	0.15	1332	0.26	1513	0.37	1665	0.50	1801	0.63
1300	1174	0.17	1376	0.28	1557	0.41	1709	0.54	1843	0.67
1400	1236	0.20	1422	0.31	1601	0.44	1754	0.58	1887	0.72
1500	1300	0.24	1471	0.34	1644	0.48	1798	0.62	1932	0.77
1600	1366	0.27	1524	0.38	1688	0.51	1841	0.67	1976	0.82
1700	1433	0.31	1579	0.42	1734	0.56	1884	0.71	2020	0.88
1800	1501	0.36	1637	0.47	1783	0.60	1928	0.76	2063	0.93
1900	1570	0.41	1698	0.52	1834	0.66	1973	0.82	2106	0.99
2000	1640	0.47	1761	0.58	1888	0.71	2020	0.88	2150	1.06

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1931	0.78	2061	0.95	2200	1.15	2363	1.43	2617	1.94
1300	1967	0.82	2087	0.98	2207	1.16	2332	1.37	2471	1.62
1400	2009	0.87	2123	1.03	2234	1.20	2345	1.38	2460	1.60
1500	2052	0.93	2164	1.09	2271	1.25	2375	1.43	2478	1.63
1600	2097	0.99	2208	1.15	2312	1.32	2412	1.50	2510	1.69
1700	2141	1.05	2252	1.22	2356	1.39	2454	1.58	2548	1.76
1800	2185	1.11	2297	1.29	2400	1.47	2497	1.66	2590	1.85
1900	2229	1.18	2341	1.36	2445	1.55	2542	1.75	2634	1.94
2000	2272	1.25	2385	1.44	2489	1.64	2586	1.84	—	—

Standard Static 1115-1900 RPM, 0.72 Max BHP

Medium Static 1115-2170 RPM, 1.06 Max BHP

High Static 1115-2660 RPM, 1.96 Max BHP

50FC-A05 THREE PHASE – STANDARD STATIC — 4 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1115	5.9	1332	7.0	1513	8.0	1665	8.8	1801	9.5
1300	1174	6.2	1376	7.2	1557	8.2	1709	9.0	1843	9.7
1400	1236	6.5	1422	7.5	1601	8.4	1754	9.2	1887	9.9
1500	1300	6.8	1471	7.7	1644	8.7	1798	9.5	—	—
1600	1366	7.2	1524	8.0	1688	8.9	1841	9.7	—	—
1700	1433	7.5	1579	8.3	1734	9.1	1884	9.9	—	—
1800	1501	7.9	1637	8.6	1783	9.4	—	—	—	—
1900	1570	8.3	1698	8.9	1834	9.7	—	—	—	—
2000	1640	8.6	1761	9.3	1888	9.9	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	—	—	—	—	—	—	—	—	—	—
1300	—	—	—	—	—	—	—	—	—	—
1400	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Standard Static 1115-1900 RPM

Fan data (cont)

50FC-A05 THREE PHASE – MEDIUM STATIC — 4 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1115	5.1	1332	6.1	1513	7.0	1665	7.7	1801	8.3
1300	1174	5.4	1376	6.3	1557	7.2	1709	7.9	1843	8.5
1400	1236	5.7	1422	6.6	1601	7.4	1754	8.1	1887	8.7
1500	1300	6.0	1471	6.8	1644	7.6	1798	8.3	1932	8.9
1600	1366	6.3	1524	7.0	1688	7.8	1841	8.5	1976	9.1
1700	1433	6.6	1579	7.3	1734	8.0	1884	8.7	2020	9.3
1800	1501	6.9	1637	7.5	1783	8.2	1928	8.9	2063	9.5
1900	1570	7.2	1698	7.8	1834	8.5	1973	9.1	2106	9.7
2000	1640	7.6	1761	8.1	1888	8.7	2020	9.3	2150	9.9

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1931	8.9	2061	9.5	—	—	—	—	—	—
1300	1967	9.1	2087	9.6	—	—	—	—	—	—
1400	2009	9.3	2123	9.8	—	—	—	—	—	—
1500	2052	9.5	—	—	—	—	—	—	—	—
1600	2097	9.7	—	—	—	—	—	—	—	—
1700	2141	9.9	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Medium Static 1115-2170 RPM

50FC-A05 THREE PHASE – HIGH STATIC — 4 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1115	4.2	1332	5.0	1513	5.7	1665	6.3	1801	6.8
1300	1174	4.4	1376	5.2	1557	5.9	1709	6.4	1843	6.9
1400	1236	4.6	1422	5.3	1601	6.0	1754	6.6	1887	7.1
1500	1300	4.9	1471	5.5	1644	6.2	1798	6.8	1932	7.3
1600	1366	5.1	1524	5.7	1688	6.3	1841	6.9	1976	7.4
1700	1433	5.4	1579	5.9	1734	6.5	1884	7.1	2020	7.6
1800	1501	5.6	1637	6.2	1783	6.7	1928	7.2	2063	7.8
1900	1570	5.9	1698	6.4	1834	6.9	1973	7.4	2106	7.9
2000	1640	6.2	1761	6.6	1888	7.1	2020	7.6	2150	8.1

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1931	7.3	2061	7.7	2200	8.3	2363	8.9	2617	9.8
1300	1967	7.4	2087	7.8	2207	8.3	2332	8.8	2471	9.3
1400	2009	7.6	2123	8.0	2234	8.4	2345	8.8	2460	9.2
1500	2052	7.7	2164	8.1	2271	8.5	2375	8.9	2478	9.3
1600	2097	7.9	2208	8.3	2312	8.7	2412	9.1	2510	9.4
1700	2141	8.0	2252	8.5	2356	8.9	2454	9.2	2548	9.6
1800	2185	8.2	2297	8.6	2400	9.0	2497	9.4	2590	9.7
1900	2229	8.4	2341	8.8	2445	9.2	2542	9.6	2634	9.9
2000	2272	8.5	2385	9.0	2489	9.4	2586	9.7	—	—

High Static 1115-2660 RPM

50FC-A06 SINGLE PHASE — 5 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	1301	0.24	1476	0.35	1639	0.47	1788	0.62	1925	0.77
1625	1381	0.28	1545	0.40	1700	0.53	1843	0.67	1976	0.83
1750	1463	0.34	1615	0.45	1763	0.59	1901	0.74	2031	0.90
1875	1548	0.40	1688	0.51	1828	0.65	1962	0.81	2087	0.97
2000	1633	0.46	1764	0.59	1897	0.73	2025	0.89	2146	1.05
2125	1720	0.54	1842	0.67	1967	0.81	2090	0.97	2208	1.15
2250	1808	0.63	1922	0.75	2040	0.90	2157	1.07	2271	1.24
2375	1897	0.72	2003	0.85	2115	1.00	2227	1.17	2336	1.35
2500	1987	0.83	2086	0.96	2191	1.11	2298	1.28	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	2053	0.93	2174	1.11	2289	1.29	—	—	—	—
1625	2101	1.00	2220	1.18	2332	1.36	—	—	—	—
1750	2152	1.07	2268	1.25	2378	1.44	—	—	—	—
1875	2206	1.15	2318	1.33	—	—	—	—	—	—
2000	2262	1.23	2372	1.42	—	—	—	—	—	—
2125	2320	1.33	—	—	—	—	—	—	—	—
2250	2380	1.43	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard Static 1301-2150 RPM, 1.06 Max BHP

Medium Static 1301-2390 RPM, 1.44 Max BHP

50FC-A06 SINGLE PHASE – STANDARD STATIC — 5 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1301	6.1	1476	6.9	1639	7.6	1788	8.3	1925	9.0
1625	1381	6.4	1545	7.2	1700	7.9	1843	8.6	1976	9.2
1750	1463	6.8	1615	7.5	1763	8.2	1901	8.8	2031	9.4
1875	1548	7.2	1688	7.9	1828	8.5	1962	9.1	2087	9.7
2000	1633	7.6	1764	8.2	1897	8.8	2025	9.4	2146	10.0
2125	1720	8.0	1842	8.6	1967	9.1	2090	9.7	—	—
2250	1808	8.4	1922	8.9	2040	9.5	—	—	—	—
2375	1897	8.8	2003	9.3	2115	9.8	—	—	—	—
2500	1987	9.2	2086	9.7	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2053	9.5	—	—	—	—	—	—	—	—
1625	2101	9.8	—	—	—	—	—	—	—	—
1750	—	—	—	—	—	—	—	—	—	—
1875	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard Static 1301-2150 RPM

Fan data (cont)

50FC-A06 SINGLE PHASE – MEDIUM STATIC — 3 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1301	5.4	1476	6.2	1639	6.9	1788	7.5	1925	8.1
1625	1381	5.8	1545	6.5	1700	7.1	1843	7.7	1976	8.3
1750	1463	6.1	1615	6.8	1763	7.4	1901	8.0	2031	8.5
1875	1548	6.5	1688	7.1	1828	7.6	1962	8.2	2087	8.7
2000	1633	6.8	1764	7.4	1897	7.9	2025	8.5	2146	9.0
2125	1720	7.2	1842	7.7	1967	8.2	2090	8.7	2208	9.2
2250	1808	7.6	1922	8.0	2040	8.5	2157	9.0	2271	9.5
2375	1897	7.9	2003	8.4	2115	8.8	2227	9.3	2336	9.8
2500	1987	8.3	2086	8.7	2191	9.2	2298	9.6	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2053	8.6	2174	9.1	2289	9.6	—	—	—	—
1625	2101	8.8	2220	9.3	2332	9.8	—	—	—	—
1750	2152	9.0	2268	9.5	2378	9.9	—	—	—	—
1875	2206	9.2	2318	9.7	—	—	—	—	—	—
2000	2262	9.5	2372	9.9	—	—	—	—	—	—
2125	2320	9.7	—	—	—	—	—	—	—	—
2250	2380	10.0	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Medium Static 1301-2390 RPM

50FC-A06 THREE PHASE — 5 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	1301	0.24	1477	0.35	1639	0.47	1788	0.62	1925	0.77
1625	1381	0.28	1545	0.40	1700	0.53	1843	0.67	1977	0.83
1750	1463	0.34	1615	0.45	1763	0.59	1902	0.74	2031	0.90
1875	1548	0.40	1688	0.51	1829	0.65	1962	0.81	2088	0.97
2000	1633	0.46	1764	0.59	1897	0.73	2025	0.89	2147	1.06
2125	1720	0.54	1842	0.67	1968	0.81	2090	0.97	2208	1.15
2250	1809	0.63	1922	0.75	2040	0.90	2158	1.07	2271	1.24
2375	1897	0.72	2003	0.85	2115	1.00	2227	1.17	2336	1.35
2500	1987	0.83	2086	0.96	2192	1.12	2299	1.29	2403	1.47

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	2053	0.93	2174	1.11	2289	1.29	2398	1.49	2502	1.69
1625	2102	1.00	2220	1.18	2332	1.36	2439	1.56	2542	1.77
1750	2153	1.07	2268	1.25	2378	1.44	2483	1.64	2584	1.85
1875	2206	1.15	2319	1.33	2426	1.53	2529	1.73	2628	1.94
2000	2262	1.23	2372	1.42	2477	1.62	2578	1.83	2675	2.04
2125	2320	1.33	2427	1.52	2530	1.72	2629	1.93	2724	2.15
2250	2380	1.43	2485	1.63	2585	1.83	2682	2.05	2775	2.27
2375	2443	1.55	2544	1.75	2642	1.96	2737	2.17	2828	2.40
2500	2506	1.67	2605	1.87	2701	2.09	2794	2.31	—	—

Standard Static 1301-2150 RPM, 1.06 Max BHP

Medium Static 1301-2390 RPM, 1.44 Max BHP

High Static 1301-2836 RPM, 2.43 Max BHP

50FC-A06 THREE PHASE – STANDARD STATIC — 5 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1301	6.1	1477	6.9	1639	7.6	1788	8.3	1925	9.0
1625	1381	6.4	1545	7.2	1700	7.9	1843	8.6	1977	9.2
1750	1463	6.8	1615	7.5	1763	8.2	1902	8.8	2031	9.4
1875	1548	7.2	1688	7.9	1829	8.5	1962	9.1	2088	9.7
2000	1633	7.6	1764	8.2	1897	8.8	2025	9.4	2147	10.0
2125	1720	8.0	1842	8.6	1968	9.2	2090	9.7	—	—
2250	1809	8.4	1922	8.9	2040	9.5	—	—	—	—
2375	1897	8.8	2003	9.3	2115	9.8	—	—	—	—
2500	1987	9.2	2086	9.7	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2053	9.5	—	—	—	—	—	—	—	—
1625	2102	9.8	—	—	—	—	—	—	—	—
1750	—	—	—	—	—	—	—	—	—	—
1875	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard Static 1301-2150 RPM

Fan data (cont)

50FC-A06 THREE PHASE – MEDIUM STATIC — 5 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1301	5.4	1477	6.2	1639	6.9	1788	7.5	1925	8.1
1625	1381	5.8	1545	6.5	1700	7.1	1843	7.7	1977	8.3
1750	1463	6.1	1615	6.8	1763	7.4	1902	8.0	2031	8.5
1875	1548	6.5	1688	7.1	1829	7.7	1962	8.2	2088	8.7
2000	1633	6.8	1764	7.4	1897	7.9	2025	8.5	2147	9.0
2125	1720	7.2	1842	7.7	1968	8.2	2090	8.7	2208	9.2
2250	1809	7.6	1922	8.0	2040	8.5	2158	9.0	2271	9.5
2375	1897	7.9	2003	8.4	2115	8.8	2227	9.3	2336	9.8
2500	1987	8.3	2086	8.7	2192	9.2	2299	9.6	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2053	8.6	2174	9.1	2289	9.6	—	—	—	—
1625	2102	8.8	2220	9.3	2332	9.8	—	—	—	—
1750	2153	9.0	2268	9.5	2378	9.9	—	—	—	—
1875	2206	9.2	2319	9.7	—	—	—	—	—	—
2000	2262	9.5	2372	9.9	—	—	—	—	—	—
2125	2320	9.7	—	—	—	—	—	—	—	—
2250	2380	10.0	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Medium Static 1301-2390 RPM

50FC-A06 THREE PHASE – HIGH STATIC — 5 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1301	4.6	1477	5.2	1639	5.8	1788	6.3	1925	6.8
1625	1381	4.9	1545	5.4	1700	6.0	1843	6.5	1977	7.0
1750	1463	5.2	1615	5.7	1763	6.2	1902	6.7	2031	7.2
1875	1548	5.5	1688	6.0	1829	6.4	1962	6.9	2088	7.4
2000	1633	5.8	1764	6.2	1897	6.7	2025	7.1	2147	7.6
2125	1720	6.1	1842	6.5	1968	6.9	2090	7.4	2208	7.8
2250	1809	6.4	1922	6.8	2040	7.2	2158	7.6	2271	8.0
2375	1897	6.7	2003	7.1	2115	7.5	2227	7.9	2336	8.2
2500	1987	7.0	2086	7.4	2192	7.7	2299	8.1	2403	8.5

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2053	7.2	2174	7.7	2289	8.1	2398	8.5	2502	8.8
1625	2102	7.4	2220	7.8	2332	8.2	2439	8.6	2542	9.0
1750	2153	7.6	2268	8.0	2378	8.4	2483	8.8	2584	9.1
1875	2206	7.8	2319	8.2	2426	8.6	2529	8.9	2628	9.3
2000	2262	8.0	2372	8.4	2477	8.7	2578	9.1	2675	9.4
2125	2320	8.2	2427	8.6	2530	8.9	2629	9.3	2724	9.6
2250	2380	8.4	2485	8.8	2585	9.1	2682	9.5	2775	9.8
2375	2443	8.6	2544	9.0	2642	9.3	2737	9.7	2828	10.0
2500	2506	8.8	2605	9.2	2701	9.5	2794	9.9	—	—

High Static 1301-2836 RPM

50FC-M07 THREE PHASE — 6 TON VERTICAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1800	1423	0.30	1550	0.39	1682	0.50	1820	0.64	1955	0.79
1950	1521	0.37	1638	0.46	1758	0.57	1883	0.70	2011	0.86
2100	1620	0.45	1730	0.54	1839	0.65	1953	0.78	2071	0.93
2250	1720	0.53	1824	0.64	1924	0.75	2029	0.88	2137	1.02
2400	1820	0.63	1919	0.74	2013	0.85	2109	0.98	2209	1.13
2550	1921	0.74	2016	0.86	2105	0.98	2194	1.11	2286	1.25
2700	2022	0.86	2113	0.99	2198	1.11	2282	1.24	2368	1.39
2850	2123	1.00	2212	1.13	2293	1.26	2373	1.40	2453	1.54
3000	2225	1.15	2311	1.29	2389	1.42	2465	1.56	2541	1.71

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1800	2079	0.95	2192	1.11	2296	1.28	2393	1.45	2485	1.62
1950	2133	1.02	2247	1.19	2353	1.37	2451	1.55	2543	1.73
2100	2189	1.10	2301	1.28	2408	1.47	2507	1.66	2601	1.85
2250	2248	1.19	2357	1.37	2462	1.57	2562	1.76	2656	1.97
2400	2312	1.30	2416	1.48	2517	1.67	2616	1.88	2711	2.09
2550	2381	1.41	2479	1.60	2576	1.79	2672	2.00	2765	2.21
2700	2456	1.55	2546	1.73	2638	1.92	2730	2.13	2821	2.35
2850	2535	1.70	2619	1.88	2705	2.07	2793	2.28	—	—
3000	2618	1.87	2696	2.05	2777	2.24	—	—	—	—

Standard Static 1423-2300 RPM, 1.31 Max BHP

Medium Static 1423-2530 RPM, 1.76 Max BHP

High Static 1423-2836 RPM, 2.43 Max BHP

50FC-M07 THREE PHASE – STANDARD STATIC — 6 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	1423	6.2	1550	6.7	1682	7.3	1820	7.9	1955	8.5
1950	1521	6.6	1638	7.1	1758	7.6	1883	8.2	2011	8.7
2100	1620	7.0	1730	7.5	1839	8.0	1953	8.5	2071	9.0
2250	1720	7.5	1824	7.9	1924	8.4	2029	8.8	2137	9.3
2400	1820	7.9	1919	8.3	2013	8.8	2109	9.2	2209	9.6
2550	1921	8.4	2016	8.8	2105	9.2	2194	9.5	2286	9.9
2700	2022	8.8	2113	9.2	2198	9.6	2282	9.9	—	—
2850	2123	9.2	2212	9.6	2293	10.0	—	—	—	—
3000	2225	9.7	—	—	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	2079	9.0	2192	9.5	2296	10.0	—	—	—	—
1950	2133	9.3	2247	9.8	—	—	—	—	—	—
2100	2189	9.5	—	—	—	—	—	—	—	—
2250	2248	9.8	—	—	—	—	—	—	—	—
2400	—	—	—	—	—	—	—	—	—	—
2550	—	—	—	—	—	—	—	—	—	—
2700	—	—	—	—	—	—	—	—	—	—
2850	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

Standard Static 1423-2300 RPM

Fan data (cont)

50FC-M07 THREE PHASE – MEDIUM STATIC — 6 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	1423	5.6	1550	6.1	1682	6.6	1820	7.2	1955	7.7
1950	1521	6.0	1638	6.5	1758	6.9	1883	7.4	2011	7.9
2100	1620	6.4	1730	6.8	1839	7.3	1953	7.7	2071	8.2
2250	1720	6.8	1824	7.2	1924	7.6	2029	8.0	2137	8.4
2400	1820	7.2	1919	7.6	2013	8.0	2109	8.3	2209	8.7
2550	1921	7.6	2016	8.0	2105	8.3	2194	8.7	2286	9.0
2700	2022	8.0	2113	8.4	2198	8.7	2282	9.0	2368	9.4
2850	2123	8.4	2212	8.7	2293	9.1	2373	9.4	2453	9.7
3000	2225	8.8	2311	9.1	2389	9.4	2465	9.7	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	2079	8.2	2192	8.7	2296	9.1	2393	9.5	2485	9.8
1950	2133	8.4	2247	8.9	2353	9.3	2451	9.7	—	—
2100	2189	8.7	2301	9.1	2408	9.5	2507	9.9	—	—
2250	2248	8.9	2357	9.3	2462	9.7	—	—	—	—
2400	2312	9.1	2416	9.5	2517	9.9	—	—	—	—
2550	2381	9.4	2479	9.8	—	—	—	—	—	—
2700	2456	9.7	—	—	—	—	—	—	—	—
2850	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

Medium Static 1423-2530 RPM

50FC-M07 THREE PHASE – HIGH STATIC — 6 TON VERTICAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	1423	5.0	1550	5.5	1682	5.9	1820	6.4	1955	6.9
1950	1521	5.4	1638	5.8	1758	6.2	1883	6.6	2011	7.1
2100	1620	5.7	1730	6.1	1839	6.5	1953	6.9	2071	7.3
2250	1720	6.1	1824	6.4	1924	6.8	2029	7.2	2137	7.5
2400	1820	6.4	1919	6.8	2013	7.1	2109	7.4	2209	7.8
2550	1921	6.8	2016	7.1	2105	7.4	2194	7.7	2286	8.1
2700	2022	7.1	2113	7.5	2198	7.8	2282	8.0	2368	8.3
2850	2123	7.5	2212	7.8	2293	8.1	2373	8.4	2453	8.6
3000	2225	7.8	2311	8.1	2389	8.4	2465	8.7	2541	9.0

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	2079	7.3	2192	7.7	2296	8.1	2393	8.4	2485	8.8
1950	2133	7.5	2247	7.9	2353	8.3	2451	8.6	2543	9.0
2100	2189	7.7	2301	8.1	2408	8.5	2507	8.8	2601	9.2
2250	2248	7.9	2357	8.3	2462	8.7	2562	9.0	2656	9.4
2400	2312	8.2	2416	8.5	2517	8.9	2616	9.2	2711	9.6
2550	2381	8.4	2479	8.7	2576	9.1	2672	9.4	2765	9.7
2700	2456	8.7	2546	9.0	2638	9.3	2730	9.6	2821	9.9
2850	2535	8.9	2619	9.2	2705	9.5	2793	9.8	—	—
3000	2618	9.2	2696	9.5	2777	9.8	—	—	—	—

High Static 1423-2836 RPM

50FC-A04 SINGLE PHASE — 3 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1017	0.07	1284	0.15	1501	0.24	1684	0.33	1843	0.44
975	1055	0.08	1311	0.16	1527	0.25	1711	0.35	1871	0.46
1050	1096	0.09	1340	0.17	1553	0.26	1737	0.36	1899	0.48
1125	1140	0.10	1371	0.18	1580	0.27	1763	0.38	1925	0.50
1200	1186	0.12	1404	0.19	1608	0.29	1789	0.40	1951	0.52
1275	1236	0.13	1440	0.21	1637	0.31	1816	0.42	1977	0.54
1350	1286	0.15	1477	0.22	1666	0.32	1843	0.44	2004	0.56
1425	1338	0.17	1517	0.24	1698	0.34	1871	0.46	2030	0.58
1500	1391	0.19	1559	0.26	1733	0.36	1900	0.48	2057	0.61

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1984	0.54	2113	0.66	2231	0.77	2342	0.89	2446	1.02
975	2014	0.57	2144	0.69	2264	0.81	2376	0.93	2481	1.06
1050	2043	0.59	2174	0.72	2295	0.84	2408	0.97	—	—
1125	2071	0.62	2203	0.74	2325	0.88	2439	1.01	—	—
1200	2098	0.64	2231	0.77	2354	0.91	2469	1.05	—	—
1275	2124	0.67	2258	0.80	2382	0.94	—	—	—	—
1350	2150	0.69	2285	0.83	2410	0.97	—	—	—	—
1425	2176	0.72	2311	0.86	2436	1.01	—	—	—	—
1500	2202	0.74	2337	0.89	2462	1.04	—	—	—	—

Standard Static 1017-1890 RPM, 0.44 Max BHP

Medium Static 1017-2190 RPM, 0.71 Max BHP

High Static 1017-2490 RPM, 1.07 Max BHP

50FC-A04 SINGLE PHASE – STANDARD STATIC — 3 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1017	5.4	1284	6.8	1501	7.9	1684	8.9	1843	9.8
975	1055	5.6	1311	6.9	1527	8.1	1711	9.1	—	—
1050	1096	5.8	1340	7.1	1553	8.2	1737	9.2	—	—
1125	1140	6.0	1371	7.3	1580	8.4	1763	9.3	—	—
1200	1186	6.3	1404	7.4	1608	8.5	1789	9.5	—	—
1275	1236	6.5	1440	7.6	1637	8.7	1816	9.6	—	—
1350	1286	6.8	1477	7.8	1666	8.8	1843	9.8	—	—
1425	1338	7.1	1517	8.0	1698	9.0	—	—	—	—
1500	1391	7.4	1559	8.2	1733	9.2	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	—	—	—	—	—	—	—	—	—	—
975	—	—	—	—	—	—	—	—	—	—
1050	—	—	—	—	—	—	—	—	—	—
1125	—	—	—	—	—	—	—	—	—	—
1200	—	—	—	—	—	—	—	—	—	—
1275	—	—	—	—	—	—	—	—	—	—
1350	—	—	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard Static 1017-1890 RPM

Fan data (cont)

50FC-A04 SINGLE PHASE – MEDIUM STATIC — 3 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1017	4.6	1284	5.9	1501	6.9	1684	7.7	1843	8.4
975	1055	4.8	1311	6.0	1527	7.0	1711	7.8	1871	8.5
1050	1096	5.0	1340	6.1	1553	7.1	1737	7.9	1899	8.7
1125	1140	5.2	1371	6.3	1580	7.2	1763	8.1	1925	8.8
1200	1186	5.4	1404	6.4	1608	7.3	1789	8.2	1951	8.9
1275	1236	5.6	1440	6.6	1637	7.5	1816	8.3	1977	9.0
1350	1286	5.9	1477	6.7	1666	7.6	1843	8.4	2004	9.2
1425	1338	6.1	1517	6.9	1698	7.8	1871	8.5	2030	9.3
1500	1391	6.4	1559	7.1	1733	7.9	1900	8.7	2057	9.4

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1984	9.1	2113	9.6	—	—	—	—	—	—
975	2014	9.2	2144	9.8	—	—	—	—	—	—
1050	2043	9.3	—	—	—	—	—	—	—	—
1125	2071	9.5	—	—	—	—	—	—	—	—
1200	2098	9.6	—	—	—	—	—	—	—	—
1275	2124	9.7	—	—	—	—	—	—	—	—
1350	2150	9.8	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Medium Static 1017-2190 RPM

50FC-A04 SINGLE PHASE – HIGH STATIC — 3 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1017	4.1	1284	5.2	1501	6.0	1684	6.8	1843	7.4
975	1055	4.2	1311	5.3	1527	6.1	1711	6.9	1871	7.5
1050	1096	4.4	1340	5.4	1553	6.2	1737	7.0	1899	7.6
1125	1140	4.6	1371	5.5	1580	6.3	1763	7.1	1925	7.7
1200	1186	4.8	1404	5.6	1608	6.5	1789	7.2	1951	7.8
1275	1236	5.0	1440	5.8	1637	6.6	1816	7.3	1977	7.9
1350	1286	5.2	1477	5.9	1666	6.7	1843	7.4	2004	8.0
1425	1338	5.4	1517	6.1	1698	6.8	1871	7.5	2030	8.2
1500	1391	5.6	1559	6.3	1733	7.0	1900	7.6	2057	8.3

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1984	8.0	2113	8.5	2231	9.0	2342	9.4	2446	9.8
975	2014	8.1	2144	8.6	2264	9.1	2376	9.5	2481	10.0
1050	2043	8.2	2174	8.7	2295	9.2	2408	9.7	—	—
1125	2071	8.3	2203	8.8	2325	9.3	2439	9.8	—	—
1200	2098	8.4	2231	9.0	2354	9.5	2469	9.9	—	—
1275	2124	8.5	2258	9.1	2382	9.6	—	—	—	—
1350	2150	8.6	2285	9.2	2410	9.7	—	—	—	—
1425	2176	8.7	2311	9.3	2436	9.8	—	—	—	—
1500	2202	8.8	2337	9.4	2462	9.9	—	—	—	—

High Static 1017-2490 RPM

50FC-A04 THREE PHASE — 3 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1017	0.07	1284	0.15	1501	0.24	1684	0.33	1843	0.44
975	1055	0.08	1311	0.16	1527	0.25	1711	0.35	1871	0.46
1050	1096	0.09	1340	0.17	1553	0.26	1737	0.36	1899	0.48
1125	1140	0.10	1371	0.18	1580	0.27	1763	0.38	1925	0.50
1200	1186	0.12	1404	0.19	1608	0.29	1789	0.40	1951	0.52
1275	1236	0.13	1440	0.21	1637	0.31	1816	0.42	1977	0.54
1350	1286	0.15	1477	0.22	1666	0.32	1843	0.44	2004	0.56
1425	1338	0.17	1517	0.24	1698	0.34	1871	0.46	2030	0.58
1500	1391	0.19	1559	0.26	1733	0.36	1900	0.48	2057	0.61

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
900	1984	0.54	2113	0.66	2231	0.77	2342	0.89	2446	1.02
975	2014	0.57	2144	0.69	2264	0.81	2376	0.93	2481	1.06
1050	2043	0.59	2174	0.72	2295	0.84	2408	0.97	—	—
1125	2071	0.62	2203	0.74	2325	0.88	2439	1.01	—	—
1200	2098	0.64	2231	0.77	2354	0.91	2469	1.05	—	—
1275	2124	0.67	2258	0.80	2382	0.94	—	—	—	—
1350	2150	0.69	2285	0.83	2410	0.97	—	—	—	—
1425	2176	0.72	2311	0.86	2436	1.01	—	—	—	—
1500	2202	0.74	2337	0.89	2462	1.04	—	—	—	—

Standard Static 1017-1890 RPM, 0.44 Max BHP

Medium Static 1017-2190 RPM, 0.71 Max BHP

High Static 1017-2490 RPM, 1.07 Max BHP

50FC-A04 THREE PHASE – STANDARD STATIC — 3 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1017	5.4	1284	6.8	1501	7.9	1684	8.9	1843	9.8
975	1055	5.6	1311	6.9	1527	8.1	1711	9.1	—	—
1050	1096	5.8	1340	7.1	1553	8.2	1737	9.2	—	—
1125	1140	6.0	1371	7.3	1580	8.4	1763	9.3	—	—
1200	1186	6.3	1404	7.4	1608	8.5	1789	9.5	—	—
1275	1236	6.5	1440	7.6	1637	8.7	1816	9.6	—	—
1350	1286	6.8	1477	7.8	1666	8.8	1843	9.8	—	—
1425	1338	7.1	1517	8.0	1698	9.0	—	—	—	—
1500	1391	7.4	1559	8.2	1733	9.2	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	—	—	—	—	—	—	—	—	—	—
975	—	—	—	—	—	—	—	—	—	—
1050	—	—	—	—	—	—	—	—	—	—
1125	—	—	—	—	—	—	—	—	—	—
1200	—	—	—	—	—	—	—	—	—	—
1275	—	—	—	—	—	—	—	—	—	—
1350	—	—	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Standard Static 1017-1890 RPM

Fan data (cont)

50FC-A04 THREE PHASE – MEDIUM STATIC — 3 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1017	4.6	1284	5.9	1501	6.9	1684	7.7	1843	8.4
975	1055	4.8	1311	6.0	1527	7.0	1711	7.8	1871	8.5
1050	1096	5.0	1340	6.1	1553	7.1	1737	7.9	1899	8.7
1125	1140	5.2	1371	6.3	1580	7.2	1763	8.1	1925	8.8
1200	1186	5.4	1404	6.4	1608	7.3	1789	8.2	1951	8.9
1275	1236	5.6	1440	6.6	1637	7.5	1816	8.3	1977	9.0
1350	1286	5.9	1477	6.7	1666	7.6	1843	8.4	2004	9.2
1425	1338	6.1	1517	6.9	1698	7.8	1871	8.5	2030	9.3
1500	1391	6.4	1559	7.1	1733	7.9	1900	8.7	2057	9.4

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1984	9.1	2113	9.6	—	—	—	—	—	—
975	2014	9.2	2144	9.8	—	—	—	—	—	—
1050	2043	9.3	—	—	—	—	—	—	—	—
1125	2071	9.5	—	—	—	—	—	—	—	—
1200	2098	9.6	—	—	—	—	—	—	—	—
1275	2124	9.7	—	—	—	—	—	—	—	—
1350	2150	9.8	—	—	—	—	—	—	—	—
1425	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—

Medium Static 1017-2190 RPM

50FC-A04 THREE PHASE – HIGH STATIC — 3 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1017	4.1	1284	5.2	1501	6.0	1684	6.8	1843	7.4
975	1055	4.2	1311	5.3	1527	6.1	1711	6.9	1871	7.5
1050	1096	4.4	1340	5.4	1553	6.2	1737	7.0	1899	7.6
1125	1140	4.6	1371	5.5	1580	6.3	1763	7.1	1925	7.7
1200	1186	4.8	1404	5.6	1608	6.5	1789	7.2	1951	7.8
1275	1236	5.0	1440	5.8	1637	6.6	1816	7.3	1977	7.9
1350	1286	5.2	1477	5.9	1666	6.7	1843	7.4	2004	8.0
1425	1338	5.4	1517	6.1	1698	6.8	1871	7.5	2030	8.2
1500	1391	5.6	1559	6.3	1733	7.0	1900	7.6	2057	8.3

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
900	1984	8.0	2113	8.5	2231	9.0	2342	9.4	2446	9.8
975	2014	8.1	2144	8.6	2264	9.1	2376	9.5	2481	10.0
1050	2043	8.2	2174	8.7	2295	9.2	2408	9.7	—	—
1125	2071	8.3	2203	8.8	2325	9.3	2439	9.8	—	—
1200	2098	8.4	2231	9.0	2354	9.5	2469	9.9	—	—
1275	2124	8.5	2258	9.1	2382	9.6	—	—	—	—
1350	2150	8.6	2285	9.2	2410	9.7	—	—	—	—
1425	2176	8.7	2311	9.3	2436	9.8	—	—	—	—
1500	2202	8.8	2337	9.4	2462	9.9	—	—	—	—

High Static 1017-2490 RPM

50FC-A05 SINGLE PHASE — 4 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1092	0.14	1306	0.24	1497	0.35	1667	0.49	1819	0.64
1300	1148	0.16	1348	0.26	1533	0.38	1700	0.52	1851	0.67
1400	1207	0.18	1394	0.28	1571	0.41	1734	0.55	1882	0.70
1500	1267	0.21	1442	0.31	1612	0.44	1770	0.58	1916	0.73
1600	1329	0.24	1493	0.35	1655	0.47	1808	0.61	1951	0.77
1700	1393	0.28	1546	0.38	1700	0.51	1848	0.65	1988	0.81
1800	1458	0.32	1602	0.42	1748	0.55	1890	0.70	2026	0.86
1900	1523	0.36	1659	0.47	1797	0.60	1934	0.75	2066	0.91
2000	1590	0.41	1719	0.52	1849	0.65	1980	0.80	2108	0.96

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1958	0.79	2089	0.96	2211	1.14	2327	1.33	2438	1.53
1300	1988	0.83	2117	1.00	2238	1.18	2352	1.37	—	—
1400	2020	0.86	2146	1.03	2266	1.22	2379	1.41	—	—
1500	2051	0.90	2177	1.08	2296	1.26	2408	1.46	—	—
1600	2084	0.94	2209	1.12	2327	1.31	2438	1.51	—	—
1700	2119	0.99	2242	1.17	2358	1.36	—	—	—	—
1800	2154	1.03	2276	1.22	2391	1.41	—	—	—	—
1900	2191	1.08	2311	1.27	2424	1.47	—	—	—	—
2000	2230	1.14	2347	1.33	2459	1.53	—	—	—	—

Standard Static 1092-1900 RPM, 0.72 Max BHP

Medium Static 1092-2170 RPM, 1.06 Max BHP

High Static 1092-2460 RPM, 1.53 Max BHP

50FC-A05 SINGLE PHASE – STANDARD STATIC — 4 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1092	5.7	1306	6.9	1497	7.9	1667	8.8	1819	9.6
1300	1148	6.0	1348	7.1	1533	8.1	1700	8.9	1851	9.7
1400	1207	6.4	1394	7.3	1571	8.3	1734	9.1	1882	9.9
1500	1267	6.7	1442	7.6	1612	8.5	1770	9.3	—	—
1600	1329	7.0	1493	7.9	1655	8.7	1808	9.5	—	—
1700	1393	7.3	1546	8.1	1700	8.9	1848	9.7	—	—
1800	1458	7.7	1602	8.4	1748	9.2	1890	9.9	—	—
1900	1523	8.0	1659	8.7	1797	9.5	—	—	—	—
2000	1590	8.4	1719	9.0	1849	9.7	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	—	—	—	—	—	—	—	—	—	—
1300	—	—	—	—	—	—	—	—	—	—
1400	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Standard Static 1092-1900 RPM

Fan data (cont)

50FC-A05 SINGLE PHASE – MEDIUM STATIC — 4 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1092	5.0	1306	6.0	1497	6.9	1667	7.7	1819	8.4
1300	1148	5.3	1348	6.2	1533	7.1	1700	7.8	1851	8.5
1400	1207	5.6	1394	6.4	1571	7.2	1734	8.0	1882	8.7
1500	1267	5.8	1442	6.6	1612	7.4	1770	8.2	1916	8.8
1600	1329	6.1	1493	6.9	1655	7.6	1808	8.3	1951	9.0
1700	1393	6.4	1546	7.1	1700	7.8	1848	8.5	1988	9.2
1800	1458	6.7	1602	7.4	1748	8.1	1890	8.7	2026	9.3
1900	1523	7.0	1659	7.6	1797	8.3	1934	8.9	2066	9.5
2000	1590	7.3	1719	7.9	1849	8.5	1980	9.1	2108	9.7

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1959	9.0	2089	9.6	—	—	—	—	—	—
1300	1988	9.2	2117	9.8	—	—	—	—	—	—
1400	2020	9.3	2146	9.9	—	—	—	—	—	—
1500	2051	9.5	—	—	—	—	—	—	—	—
1600	2084	9.6	—	—	—	—	—	—	—	—
1700	2119	9.8	—	—	—	—	—	—	—	—
1800	2154	9.9	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Medium Static 1092-2170 RPM

50FC-A05 SINGLE PHASE – HIGH STATIC — 4 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1092	4.4	1306	5.3	1497	6.1	1667	6.8	1819	7.4
1300	1148	4.7	1348	5.5	1533	6.2	1700	6.9	1851	7.5
1400	1207	4.9	1394	5.7	1571	6.4	1734	7.0	1882	7.7
1500	1267	5.2	1442	5.9	1612	6.6	1770	7.2	1916	7.8
1600	1329	5.4	1493	6.1	1655	6.7	1808	7.3	1951	7.9
1700	1393	5.7	1546	6.3	1700	6.9	1848	7.5	1988	8.1
1800	1458	5.9	1602	6.5	1748	7.1	1890	7.7	2026	8.2
1900	1523	6.2	1659	6.7	1797	7.3	1934	7.9	2066	8.4
2000	1590	6.5	1719	7.0	1849	7.5	1980	8.0	2108	8.6

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1959	8.0	2089	8.5	2211	9.0	2327	9.5	2438	9.9
1300	1988	8.1	2117	8.6	2238	9.1	2352	9.6	—	—
1400	2020	8.2	2146	8.7	2266	9.2	2379	9.7	—	—
1500	2051	8.3	2177	8.8	2296	9.3	2408	9.8	—	—
1600	2084	8.5	2209	9.0	2327	9.5	2438	9.9	—	—
1700	2119	8.6	2242	9.1	2358	9.6	—	—	—	—
1800	2154	8.8	2276	9.3	2391	9.7	—	—	—	—
1900	2191	8.9	2311	9.4	2424	9.9	—	—	—	—
2000	2230	9.1	2347	9.5	2459	10.0	—	—	—	—

High Static 1092-2460 RPM

50FC-A05 THREE PHASE — 4 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1093	0.14	1306	0.24	1497	0.35	1667	0.49	1819	0.64
1300	1148	0.16	1348	0.26	1533	0.38	1700	0.52	1850	0.67
1400	1206	0.18	1393	0.28	1571	0.41	1734	0.55	1883	0.70
1500	1266	0.21	1442	0.31	1612	0.44	1770	0.58	1916	0.73
1600	1329	0.24	1493	0.35	1655	0.47	1808	0.61	1951	0.77
1700	1393	0.28	1546	0.38	1700	0.51	1848	0.65	1988	0.81
1800	1458	0.32	1602	0.42	1747	0.55	1890	0.70	2026	0.86
1900	1523	0.36	1659	0.47	1797	0.60	1934	0.75	2066	0.91
2000	1590	0.41	1718	0.52	1849	0.65	1980	0.80	2108	0.96

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1200	1959	0.79	2089	0.96	2211	1.14	2327	1.33	2438	1.53
1300	1988	0.83	2117	1.00	2238	1.18	2352	1.37	2462	1.57
1400	2019	0.86	2146	1.03	2266	1.22	2379	1.41	2487	1.61
1500	2052	0.90	2177	1.08	2296	1.26	2408	1.46	2515	1.66
1600	2084	0.94	2209	1.12	2327	1.31	2438	1.51	2544	1.71
1700	2119	0.99	2242	1.17	2358	1.36	2469	1.56	2574	1.77
1800	2154	1.03	2276	1.22	2391	1.41	2500	1.61	2605	1.83
1900	2191	1.08	2311	1.27	2424	1.47	2533	1.68	2636	1.89
2000	2230	1.14	2347	1.33	2459	1.53	2566	1.74	—	—

Standard Static 1093-1900 RPM, 0.72 Max BHP

Medium Static 1093-2170 RPM, 1.06 Max BHP

High Static 1093-2660 RPM, 1.96 Max BHP

50FC-A05 THREE PHASE – STANDARD STATIC — 4 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1093	5.8	1306	6.9	1497	7.9	1667	8.8	1819	9.6
1300	1148	6.0	1348	7.1	1533	8.1	1700	8.9	1850	9.7
1400	1206	6.3	1393	7.3	1571	8.3	1734	9.1	1883	9.9
1500	1266	6.7	1442	7.6	1612	8.5	1770	9.3	—	—
1600	1329	7.0	1493	7.9	1655	8.7	1808	9.5	—	—
1700	1393	7.3	1546	8.1	1700	8.9	1848	9.7	—	—
1800	1458	7.7	1602	8.4	1747	9.2	1890	9.9	—	—
1900	1523	8.0	1659	8.7	1797	9.5	—	—	—	—
2000	1590	8.4	1718	9.0	1849	9.7	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	—	—	—	—	—	—	—	—	—	—
1300	—	—	—	—	—	—	—	—	—	—
1400	—	—	—	—	—	—	—	—	—	—
1500	—	—	—	—	—	—	—	—	—	—
1600	—	—	—	—	—	—	—	—	—	—
1700	—	—	—	—	—	—	—	—	—	—
1800	—	—	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Standard Static 1093-1900 RPM

Fan data (cont)

50FC-M05 THREE PHASE – MEDIUM STATIC — 4 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1093	5.0	1306	6.0	1497	6.9	1667	7.7	1819	8.4
1300	1148	5.3	1348	6.2	1533	7.1	1700	7.8	1850	8.5
1400	1206	5.6	1393	6.4	1571	7.2	1734	8.0	1883	8.7
1500	1266	5.8	1442	6.6	1612	7.4	1770	8.2	1916	8.8
1600	1329	6.1	1493	6.9	1655	7.6	1808	8.3	1951	9.0
1700	1393	6.4	1546	7.1	1700	7.8	1848	8.5	1988	9.2
1800	1458	6.7	1602	7.4	1747	8.1	1890	8.7	2026	9.3
1900	1523	7.0	1659	7.6	1797	8.3	1934	8.9	2066	9.5
2000	1590	7.3	1718	7.9	1849	8.5	1980	9.1	2108	9.7

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1959	9.0	2089	9.6	—	—	—	—	—	—
1300	1988	9.2	2117	9.8	—	—	—	—	—	—
1400	2019	9.3	2146	9.9	—	—	—	—	—	—
1500	2052	9.5	—	—	—	—	—	—	—	—
1600	2084	9.6	—	—	—	—	—	—	—	—
1700	2119	9.8	—	—	—	—	—	—	—	—
1800	2154	9.9	—	—	—	—	—	—	—	—
1900	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—

Medium Static 1093-2170 RPM

50FC-M05 THREE PHASE – HIGH STATIC — 4 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1093	4.1	1306	4.9	1497	5.6	1667	6.3	1819	6.8
1300	1148	4.3	1348	5.1	1533	5.8	1700	6.4	1850	7.0
1400	1206	4.5	1393	5.2	1571	5.9	1734	6.5	1883	7.1
1500	1266	4.8	1442	5.4	1612	6.1	1770	6.7	1916	7.2
1600	1329	5.0	1493	5.6	1655	6.2	1808	6.8	1951	7.3
1700	1393	5.2	1546	5.8	1700	6.4	1848	6.9	1988	7.5
1800	1458	5.5	1602	6.0	1747	6.6	1890	7.1	2026	7.6
1900	1523	5.7	1659	6.2	1797	6.8	1934	7.3	2066	7.8
2000	1590	6.0	1718	6.5	1849	7.0	1980	7.4	2108	7.9

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1200	1959	7.4	2089	7.9	2211	8.3	2327	8.7	2438	9.2
1300	1988	7.5	2117	8.0	2238	8.4	2352	8.8	2462	9.3
1400	2019	7.6	2146	8.1	2266	8.5	2379	8.9	2487	9.3
1500	2052	7.7	2177	8.2	2296	8.6	2408	9.1	2515	9.5
1600	2084	7.8	2209	8.3	2327	8.7	2438	9.2	2544	9.6
1700	2119	8.0	2242	8.4	2358	8.9	2469	9.3	2574	9.7
1800	2154	8.1	2276	8.6	2391	9.0	2500	9.4	2605	9.8
1900	2191	8.2	2311	8.7	2424	9.1	2533	9.5	2636	9.9
2000	2230	8.4	2347	8.8	2459	9.2	2566	9.6	—	—

High Static 1093-2660 RPM

50FC-A06 SINGLE PHASE — 5 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	1267	0.21	1442	0.31	1612	0.44	1770	0.58	1916	0.73
1625	1345	0.25	1506	0.35	1666	0.48	1818	0.62	1960	0.78
1750	1425	0.30	1574	0.40	1723	0.53	1869	0.68	2006	0.84
1875	1507	0.35	1644	0.46	1785	0.59	1923	0.73	2056	0.90
2000	1590	0.41	1718	0.52	1849	0.65	1980	0.80	2108	0.96
2125	1674	0.48	1794	0.59	1917	0.72	2041	0.87	2163	1.04
2250	1759	0.56	1872	0.67	1987	0.80	2104	0.95	2221	1.12
2375	1845	0.64	1951	0.76	2060	0.89	2171	1.05	2281	1.21
2500	1932	0.74	2032	0.86	2135	0.99	2239	1.15	2345	1.32

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	2051	0.90	2177	1.08	2296	1.26	—	—	—	—
1625	2093	0.95	2217	1.13	2334	1.32	—	—	—	—
1750	2136	1.01	2259	1.19	2374	1.38	—	—	—	—
1875	2182	1.07	2302	1.26	—	—	—	—	—	—
2000	2230	1.14	2347	1.33	—	—	—	—	—	—
2125	2281	1.22	—	—	—	—	—	—	—	—
2250	2334	1.30	—	—	—	—	—	—	—	—
2375	2390	1.40	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard Static 1267-2150 RPM, 1.06 Max BHP

Medium Static 1267-2390 RPM, 1.44 Max BHP

50FC-A06 SINGLE PHASE – STANDARD STATIC — 5 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1267	5.9	1442	6.7	1612	7.5	1770	8.2	1916	8.9
1625	1345	6.3	1506	7.0	1666	7.7	1818	8.5	1960	9.1
1750	1425	6.6	1574	7.3	1723	8.0	1869	8.7	2006	9.3
1875	1507	7.0	1644	7.6	1785	8.3	1923	8.9	2056	9.6
2000	1590	7.4	1719	8.0	1849	8.6	1980	9.2	2108	9.8
2125	1674	7.8	1794	8.3	1917	8.9	2041	9.5	—	—
2250	1760	8.2	1872	8.7	1987	9.2	2104	9.8	—	—
2375	1845	8.6	1951	9.1	2060	9.6	—	—	—	—
2500	1932	9.0	2032	9.5	2135	9.9	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2051	9.5	—	—	—	—	—	—	—	—
1625	2093	9.7	—	—	—	—	—	—	—	—
1750	2136	9.9	—	—	—	—	—	—	—	—
1875	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard Static 1267-2150 RPM

Fan data (cont)

50FC-A06 SINGLE PHASE – MEDIUM STATIC — 5 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1267	5.3	1442	6.0	1612	6.7	1770	7.4	1916	8.0
1625	1345	5.6	1506	6.3	1666	7.0	1818	7.6	1960	8.2
1750	1425	6.0	1574	6.6	1723	7.2	1869	7.8	2006	8.4
1875	1507	6.3	1644	6.9	1785	7.5	1923	8.0	2056	8.6
2000	1590	6.7	1719	7.2	1849	7.7	1980	8.3	2108	8.8
2125	1674	7.0	1794	7.5	1917	8.0	2041	8.5	2163	9.1
2250	1760	7.4	1872	7.8	1987	8.3	2104	8.8	2221	9.3
2375	1845	7.7	1951	8.2	2060	8.6	2171	9.1	2281	9.5
2500	1932	8.1	2032	8.5	2135	8.9	2239	9.4	2345	9.8

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2051	8.6	2177	9.1	2296	9.6	—	—	—	—
1625	2093	8.8	2217	9.3	2334	9.8	—	—	—	—
1750	2136	8.9	2259	9.5	2374	9.9	—	—	—	—
1875	2182	9.1	2302	9.6	—	—	—	—	—	—
2000	2230	9.3	2347	9.8	—	—	—	—	—	—
2125	2281	9.5	—	—	—	—	—	—	—	—
2250	2334	9.8	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Medium Static 1267-2390 RPM

50FC-A06 THREE PHASE — 5 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	1267	0.21	1442	0.31	1612	0.44	1770	0.58	1916	0.73
1625	1345	0.25	1506	0.35	1666	0.48	1818	0.62	1960	0.78
1750	1425	0.30	1574	0.40	1723	0.53	1869	0.68	2006	0.84
1875	1507	0.35	1644	0.46	1785	0.59	1923	0.73	2056	0.90
2000	1590	0.41	1718	0.52	1849	0.65	1980	0.80	2108	0.96
2125	1674	0.48	1794	0.59	1917	0.72	2041	0.87	2163	1.04
2250	1759	0.56	1872	0.67	1987	0.80	2104	0.95	2221	1.12
2375	1845	0.64	1951	0.76	2060	0.89	2171	1.05	2281	1.21
2500	1932	0.74	2032	0.86	2135	0.99	2239	1.15	2345	1.32

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1500	2051	0.90	2177	1.08	2296	1.26	2408	1.46	2515	1.66
1625	2093	0.95	2217	1.13	2334	1.32	2445	1.52	2551	1.72
1750	2136	1.01	2259	1.19	2374	1.38	2484	1.59	2589	1.80
1875	2182	1.07	2302	1.26	2416	1.45	2524	1.66	2628	1.87
2000	2230	1.14	2347	1.33	2459	1.53	2566	1.74	2669	1.96
2125	2281	1.22	2395	1.41	2505	1.61	2610	1.83	2711	2.05
2250	2334	1.30	2445	1.50	2552	1.70	2655	1.92	2754	2.14
2375	2391	1.40	2497	1.59	2601	1.80	2702	2.02	2800	2.25
2500	2449	1.50	2552	1.70	2653	1.91	2751	2.13	—	—

Standard Static 1267-2150 RPM, 1.06 Max BHP

Medium Static 1267-2390 RPM, 1.44 Max BHP

High Static 1267-2836 RPM, 2.43 Max BHP

50FC-A06 THREE PHASE – STANDARD STATIC — 5 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1267	5.9	1442	6.7	1612	7.5	1770	8.2	1916	8.9
1625	1345	6.3	1506	7.0	1666	7.7	1818	8.5	1960	9.1
1750	1425	6.6	1574	7.3	1723	8.0	1869	8.7	2006	9.3
1875	1507	7.0	1644	7.6	1785	8.3	1923	8.9	2056	9.6
2000	1590	7.4	1719	8.0	1849	8.6	1980	9.2	2108	9.8
2125	1674	7.8	1794	8.3	1917	8.9	2041	9.5	—	—
2250	1760	8.2	1872	8.7	1987	9.2	2104	9.8	—	—
2375	1845	8.6	1951	9.1	2060	9.6	—	—	—	—
2500	1932	9.0	2032	9.5	2135	9.9	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2051	9.5	—	—	—	—	—	—	—	—
1625	2093	9.7	—	—	—	—	—	—	—	—
1750	2136	9.9	—	—	—	—	—	—	—	—
1875	—	—	—	—	—	—	—	—	—	—
2000	—	—	—	—	—	—	—	—	—	—
2125	—	—	—	—	—	—	—	—	—	—
2250	—	—	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Standard Static 1267-2150 RPM

Fan data (cont)

50FC-A06 THREE PHASE – MEDIUM STATIC — 5 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1267	5.3	1442	6.0	1612	6.7	1770	7.4	1916	8.0
1625	1345	5.6	1506	6.3	1666	7.0	1818	7.6	1960	8.2
1750	1425	6.0	1574	6.6	1723	7.2	1869	7.8	2006	8.4
1875	1507	6.3	1644	6.9	1785	7.5	1923	8.0	2056	8.6
2000	1590	6.7	1719	7.2	1849	7.7	1980	8.3	2108	8.8
2125	1674	7.0	1794	7.5	1917	8.0	2041	8.5	2163	9.1
2250	1760	7.4	1872	7.8	1987	8.3	2104	8.8	2221	9.3
2375	1845	7.7	1951	8.2	2060	8.6	2171	9.1	2281	9.5
2500	1932	8.1	2032	8.5	2135	8.9	2239	9.4	2345	9.8

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2051	8.6	2177	9.1	2296	9.6	—	—	—	—
1625	2093	8.8	2217	9.3	2334	9.8	—	—	—	—
1750	2136	8.9	2259	9.5	2374	9.9	—	—	—	—
1875	2182	9.1	2302	9.6	—	—	—	—	—	—
2000	2230	9.3	2347	9.8	—	—	—	—	—	—
2125	2281	9.5	—	—	—	—	—	—	—	—
2250	2334	9.8	—	—	—	—	—	—	—	—
2375	—	—	—	—	—	—	—	—	—	—
2500	—	—	—	—	—	—	—	—	—	—

Medium Static 1267-2390 RPM

50FC-A06 THREE PHASE – HIGH STATIC — 5 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	1267	4.5	1442	5.1	1612	5.7	1770	6.2	1916	6.8
1625	1345	4.7	1506	5.3	1666	5.9	1818	6.4	1960	6.9
1750	1425	5.0	1574	5.6	1723	6.1	1869	6.6	2006	7.1
1875	1507	5.3	1644	5.8	1785	6.3	1923	6.8	2056	7.2
2000	1590	5.6	1719	6.1	1849	6.5	1980	7.0	2108	7.4
2125	1674	5.9	1794	6.3	1917	6.8	2041	7.2	2163	7.6
2250	1760	6.2	1872	6.6	1987	7.0	2104	7.4	2221	7.8
2375	1845	6.5	1951	6.9	2060	7.3	2171	7.7	2281	8.0
2500	1932	6.8	2032	7.2	2135	7.5	2239	7.9	2345	8.3

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1500	2051	7.2	2177	7.7	2296	8.1	2408	8.5	2515	8.9
1625	2093	7.4	2217	7.8	2334	8.2	2445	8.6	2551	9.0
1750	2136	7.5	2259	8.0	2374	8.4	2484	8.8	2589	9.1
1875	2182	7.7	2302	8.1	2416	8.5	2524	8.9	2628	9.3
2000	2230	7.9	2347	8.3	2459	8.7	2566	9.0	2669	9.4
2125	2281	8.0	2395	8.4	2505	8.8	2610	9.2	2711	9.6
2250	2334	8.2	2445	8.6	2552	9.0	2655	9.4	2755	9.7
2375	2391	8.4	2498	8.8	2602	9.2	2702	9.5	2800	9.9
2500	2449	8.6	2552	9.0	2653	9.4	2752	9.7	—	—

High Static 1267-2836 RPM

50FC-M07 THREE PHASE — 6 TON HORIZONTAL SUPPLY (RPM - BHP)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1800	1379	0.27	1512	0.35	1650	0.46	1786	0.58	1918	0.72
1950	1473	0.32	1594	0.41	1721	0.52	1848	0.64	1973	0.78
2100	1569	0.39	1680	0.48	1796	0.59	1915	0.71	2032	0.85
2250	1666	0.47	1769	0.56	1876	0.67	1986	0.79	2096	0.93
2400	1764	0.55	1860	0.65	1959	0.76	2061	0.88	2165	1.02
2550	1863	0.65	1952	0.75	2045	0.86	2140	0.99	2237	1.13
2700	1963	0.76	2047	0.86	2133	0.97	2222	1.10	2313	1.24
2850	2063	0.88	2142	0.99	2223	1.10	2307	1.23	2393	1.37
3000	2163	1.01	2238	1.12	2315	1.24	2394	1.37	2474	1.52

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP	RPM	BHP
1800	2044	0.87	2163	1.03	2276	1.20	2383	1.38	2486	1.57
1950	2094	0.93	2210	1.10	2320	1.27	2426	1.45	2527	1.64
2100	2148	1.00	2260	1.17	2367	1.34	2471	1.53	2570	1.72
2250	2206	1.08	2313	1.25	2417	1.43	2518	1.61	2616	1.81
2400	2268	1.18	2371	1.34	2471	1.52	2569	1.71	2664	1.90
2550	2335	1.28	2432	1.45	2528	1.62	2622	1.81	2715	2.01
2700	2405	1.40	2497	1.56	2589	1.74	2680	1.93	2769	2.13
2850	2479	1.53	2566	1.69	2654	1.87	2740	2.06	2826	2.26
3000	2556	1.67	2639	1.84	2722	2.02	2804	2.21	—	—

Standard Static 1379-2300 RPM, 1.31 Max BHP

Medium Static 1379-2530 RPM, 1.76 Max BHP

High Static 1379-2836 RPM, 2.43 Max BHP

50FC-M07 THREE PHASE – STANDARD STATIC — 6 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	1379	6.0	1512	6.6	1650	7.2	1786	7.8	1918	8.3
1950	1473	6.4	1594	6.9	1721	7.5	1848	8.0	1973	8.6
2100	1569	6.8	1680	7.3	1796	7.8	1915	8.3	2032	8.8
2250	1666	7.2	1769	7.7	1876	8.2	1986	8.6	2096	9.1
2400	1764	7.7	1860	8.1	1959	8.5	2061	9.0	2165	9.4
2550	1863	8.1	1952	8.5	2045	8.9	2140	9.3	2237	9.7
2700	1963	8.5	2047	8.9	2133	9.3	2222	9.7	—	—
2850	2063	9.0	2142	9.3	2223	9.7	—	—	—	—
3000	2163	9.4	2238	9.7	—	—	—	—	—	—

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	2044	8.9	2163	9.4	2276	9.9	—	—	—	—
1950	2094	9.1	2210	9.6	—	—	—	—	—	—
2100	2148	9.3	2260	9.8	—	—	—	—	—	—
2250	2206	9.6	—	—	—	—	—	—	—	—
2400	2268	9.9	—	—	—	—	—	—	—	—
2550	—	—	—	—	—	—	—	—	—	—
2700	—	—	—	—	—	—	—	—	—	—
2850	—	—	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

Standard Static 1379-2300 RPM

Fan data (cont)

50FC-M07 THREE PHASE – MEDIUM STATIC — 6 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	1379	5.5	1512	6.0	1650	6.5	1786	7.1	1918	7.6
1950	1473	5.8	1594	6.3	1721	6.8	1848	7.3	1973	7.8
2100	1569	6.2	1680	6.6	1796	7.1	1915	7.6	2032	8.0
2250	1666	6.6	1769	7.0	1876	7.4	1986	7.8	2096	8.3
2400	1764	7.0	1860	7.4	1959	7.7	2061	8.1	2165	8.6
2550	1863	7.4	1952	7.7	2045	8.1	2140	8.5	2237	8.8
2700	1963	7.8	2047	8.1	2133	8.4	2222	8.8	2313	9.1
2850	2063	8.2	2142	8.5	2223	8.8	2307	9.1	2393	9.5
3000	2163	8.5	2238	8.8	2315	9.2	2394	9.5	2474	9.8

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	2044	8.1	2163	8.5	2276	9.0	2383	9.4	2486	9.8
1950	2094	8.3	2210	8.7	2320	9.2	2426	9.6	2527	10.0
2100	2148	8.5	2260	8.9	2367	9.4	2471	9.8	—	—
2250	2206	8.7	2313	9.1	2417	9.6	2518	10.0	—	—
2400	2268	9.0	2371	9.4	2471	9.8	—	—	—	—
2550	2335	9.2	2432	9.6	2528	10.0	—	—	—	—
2700	2405	9.5	2497	9.9	—	—	—	—	—	—
2850	2479	9.8	—	—	—	—	—	—	—	—
3000	—	—	—	—	—	—	—	—	—	—

Medium Static 1379-2530 RPM

50FC-M07 THREE PHASE – HIGH STATIC — 6 TON HORIZONTAL SUPPLY (RPM - VDC)

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	0.2		0.4		0.6		0.8		1.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	1379	4.9	1512	5.3	1650	5.8	1786	6.3	1918	6.8
1950	1473	5.2	1594	5.6	1721	6.1	1848	6.5	1973	7.0
2100	1569	5.5	1680	5.9	1796	6.3	1915	6.8	2032	7.2
2250	1666	5.9	1769	6.2	1876	6.6	1986	7.0	2096	7.4
2400	1764	6.2	1860	6.6	1959	6.9	2061	7.3	2165	7.6
2550	1863	6.6	1952	6.9	2045	7.2	2140	7.5	2237	7.9
2700	1963	6.9	2047	7.2	2133	7.5	2222	7.8	2313	8.2
2850	2063	7.3	2142	7.6	2223	7.8	2307	8.1	2393	8.4
3000	2163	7.6	2238	7.9	2315	8.2	2394	8.4	2474	8.7

CFM	AVAILABLE EXTERNAL STATIC PRESSURE (in. wg)									
	1.2		1.4		1.6		1.8		2.0	
	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc	RPM	Vdc
1800	2044	7.2	2163	7.6	2276	8.0	2383	8.4	2486	8.8
1950	2094	7.4	2210	7.8	2320	8.2	2426	8.6	2527	8.9
2100	2148	7.6	2260	8.0	2367	8.3	2471	8.7	2570	9.1
2250	2206	7.8	2313	8.2	2417	8.5	2518	8.9	2616	9.2
2400	2268	8.0	2371	8.4	2471	8.7	2569	9.1	2664	9.4
2550	2335	8.2	2432	8.6	2528	8.9	2622	9.2	2715	9.6
2700	2405	8.5	2497	8.8	2589	9.1	2680	9.4	2769	9.8
2850	2479	8.7	2566	9.0	2654	9.4	2740	9.7	2826	10.0
3000	2556	9.0	2639	9.3	2722	9.6	2804	9.9	—	—

High Static 1379-2836 RPM

Electrical data

Legend and Notes

Applicable for Electrical Data Tables on pages 98 to 118

LEGEND

BRKR — Circuit Breaker
C.O. — Convenience Outlet
FLA — Full Load Amps
IFM — Indoor Fan Motor
LRA — Locked Rotor Amps
MCA — Minimum Circuit Amps
P.E. — Power Exhaust
PWRD C.O. — Powered Convenience Outlet
RLA — Rated Load Amps
UNPWR C.O. — Unpowered Convenience Outlet

NOTES:

1. In compliance with NEC requirements for multi-motor and combination load equipment (refer to NEC Articles 430 and 440), the overcurrent protective device for the unit shall be fuse or HACR breaker. Canadian units may be fuse or circuit breaker.
2. For 208/230 v units, where one value is show it is the same for either 208 or 230 volts.
3. **Unbalanced 3-Phase Supply Voltage**
   Never operate a motor where a phase imbalance in supply voltage is greater than 2%. Use the following formula to determine the percentage of voltage imbalance.

% Voltage Imbalance:

$$= 100 \times \frac{\text{max voltage deviation from average voltage}}{\text{average voltage}}$$

Example: Supply voltage is 230-3-60

AB = 224 v
BC = 231 v
AC = 226 v

$$\text{Average Voltage} = \frac{(224 + 231 + 226)}{3} = \frac{681}{3} = 227$$

Determine maximum deviation from average voltage.
(AB) 227-224 = 3 v
(BC) 231-227 = 4 v
(AC) 227-226 = 1 v
Maximum deviation is 4 v.
Determine percent of voltage imbalance.

$$\text{\% Voltage Imbalance} = 100x \frac{4}{227} = 1.78\%$$

This amount of phase imbalance is satisfactory as it is below the maximum allowable 2%.

IMPORTANT: If the supply voltage phase imbalance is more than 2%, contact your local electric utility company immediately.

NOTE: Check all factory and field electrical connections for tightness.

Electrical data (cont)

48/50FC**04-07 COOLING ELECTRICAL DATA

48/50FC UNIT	V-Ph-Hz	UNIT VOLTAGE RANGE		COMPRESSOR		OFM (EA)		IFM			COMBUSTION FAN MOTOR	POWER EXHAUST	
		MIN	MAX	RLA	LRA	WATTS	FLA	TYPE	EFFCY AT FULL LOAD	FLA	FLA	KIT QTY	FLA (EA KIT)
**04	208-1-60	187	253	15.4	84	275	1.5	STD	83%	3.0	0.48	1	1.9
								MED	84%	4.5			
								HIGH	89%	6.1			
	230-1-60	187	253	15.4	84	275	1.5	STD	83%	3.0	0.48	1	1.9
								MED	84%	4.5			
								HIGH	89%	6.1			
	208-3-60	187	253	10.4	73	275	1.5	STD	83%	3.0	0.48	1	1.9
								MED	84%	4.5			
								HIGH	89%	6.1			
	230-3-60	187	253	10.4	73	275	1.5	STD	83%	3.0	0.48	1	1.9
								MED	84%	4.5			
								HIGH	89%	6.1			
	460-3-60	414	506	5.8	38	275	0.8	STD	85%	0.8	0.25	1	1.0
								MED	85%	1.2			
								HIGH	84%	1.5			
	575-3-60	518	633	3.8	37	275	0.6	STD	84%	0.8	0.24	1	1.9
								MED	84%	1.1			
								HIGH	85%	1.5			
**05	208-1-60	187	253	19.6	130	275	1.5	STD	84%	4.5	0.48	1	1.9
								MED	88%	6.1			
								HIGH	84%	8.8			
	230-1-60	187	253	19.6	130	275	1.5	STD	84%	4.5	0.48	1	1.9
								MED	88%	6.1			
								HIGH	84%	8.8			
	208-3-60	187	253	13.7	83	275	1.5	STD	84%	4.5	0.48	1	1.9
								MED	88%	6.1			
								HIGH	85%	5.1			
	230-3-60	187	253	13.7	83	275	1.5	STD	84%	4.5	0.48	1	1.9
								MED	88%	6.1			
								HIGH	85%	5.1			
	460-3-60	414	506	6.2	41	275	0.8	STD	85%	1.2	0.25	1	1.0
								MED	86%	1.5			
								HIGH	88%	2.4			
	575-3-60	518	633	4.8	33	275	0.6	STD	84%	1.1	0.24	1	1.9
								MED	85%	1.5			
								HIGH	88%	2.2			
**06	208-1-60	187	253	24.4	144	275	1.5	STD	85%	6.4	0.48	1	1.9
								MED	84%	8.6			
	230-1-60	187	253	24.4	144	275	1.5	STD	85%	6.4	0.48	1	1.9
								MED	84%	8.6			
	208-3-60	187	253	16.0	110	275	1.5	STD	85%	6.4	0.48	1	1.9
								MED	84%	8.6			
								HIGH	84%	6.4			
	230-3-60	187	253	16.0	110	275	1.5	STD	85%	6.4	0.48	1	1.9
								MED	84%	8.6			
								HIGH	84%	6.4			
	460-3-60	414	506	7.8	52	275	0.8	STD	86%	1.5	0.25	1	1.0
								MED	86%	1.9			
								HIGH	88%	2.9			
	575-3-60	518	633	5.7	39	275	0.6	STD	84%	1.5	0.24	1	1.9
								MED	85%	1.8			
								HIGH	87%	2.5			

48/50FC**04-07 COOLING ELECTRICAL DATA (cont)

48/50FC UNIT	V-Ph-Hz	UNIT VOLTAGE RANGE		COMPRESSOR		OFM (EA)		IFM			COMBUSTION FAN MOTOR	POWER EXHAUST	
		MIN	MAX	RLA	LRA	WATTS	FLA	TYPE	EFFCY AT FULL LOAD	FLA	FLA	KIT QTY	FLA (EA KIT)
**07	208-3-60	187	253	17.5	136	275	1.5	STD	84%	7.8	0.48	1	1.9
								MED	88%	4.5			
								HIGH	84%	6.4			
	230-3-60	187	253	17.5	136	275	1.5	STD	84%	7.8	0.48	1	1.9
								MED	88%	4.5			
								HIGH	84%	6.4			
	460-3-60	414	506	8.4	66	275	0.8	STD	85%	1.8	0.25	1	1.0
								MED	88%	2.2			
								HIGH	88%	2.9			
	575-3-60	518	633	6.3	55	275	0.6	STD	85%	1.7	0.24	1	1.9
								MED	88%	2.0			
								HIGH	87%	2.5			

Electrical data (cont)

48FC**04-07 MCA MOCP ELECTRICAL DATA

48FC UNIT SIZE	NOM. V-PH-Hz	IFM TYPE	NO CONVENIENCE OUTLET OR UNPOWERED CONVENIENCE OUTLET							
			NO POWER EXHAUST				w/ POWER EXHAUST (powered from unit)			
			MCA	FUSE OR HACR BREAKER	DISCONNECT SIZE		MCA	FUSE OR HACR BREAKER	DISCONNECT SIZE	
					FLA	LRA			FLA	LRA
**04	208/230-1-60	STD	24	30	23	92	26	30	25	94
		MED	26	30	25	94	28	40	27	96
		HIGH	27	40	26	97	29	40	29	99
	208/230-3-60	STD	18	25	17	81	20	25	19	83
		MED	19	25	19	83	21	30	21	85
		HIGH	21	30	21	86	23	30	23	88
	460-3-60	STD	9	15	9	41	10	15	10	42
		MED	10	15	9	42	11	15	10	43
		HIGH	10	15	9	42	11	15	10	43
	575-3-60	STD	7	15	6	40	9	15	8	42
		MED	7	15	6	41	9	15	9	43
		HIGH	7	15	7	41	9	15	9	43
**05	208/230-1-60	STD	31	50	29	140	33	50	32	142
		MED	33	50	31	143	34	50	33	145
		HIGH	35	50	34	146	37	50	37	148
	208/230-3-60	STD	24	30	23	93	25	30	25	95
		MED	25	30	24	96	27	40	27	98
		HIGH	24	30	23	94	26	30	26	96
	460-3-60	STD	10	15	9	45	11	15	11	46
		MED	11	15	10	45	12	15	11	46
		HIGH	11	15	11	46	12	15	12	47
	575-3-60	STD	8	15	7	37	10	15	10	39
		MED	9	15	8	37	10	15	10	39
		HIGH	9	15	9	38	11	15	11	40
**06	208/230-1-60	STD	39	60	37	157	41	60	39	159
		MED	41	60	40	160	43	60	42	162
	208/230-3-60	STD	28	40	27	123	30	45	30	125
		MED	31	45	30	126	32	45	32	128
		HIGH	28	40	27	123	30	45	30	125
	460-3-60	STD	13	15	12	56	14	20	13	57
		MED	13	20	12	57	14	20	13	58
		HIGH	14	20	13	58	15	20	14	59
	575-3-60	STD	10	15	9	43	12	15	11	45
		MED	10	15	9	43	12	15	12	45
		HIGH	11	15	10	45	13	15	12	47
**07	208/230-3-60	STD	32	45	31	151	34	50	33	153
		MED	28	45	27	146	30	45	29	148
		HIGH	30	45	29	149	32	45	31	151
	460-3-60	STD	14	20	13	71	15	20	14	72
		MED	14	20	13	71	15	20	14	72
		HIGH	15	20	14	72	16	20	15	73
	575-3-60	STD	11	15	10	59	13	15	12	61
		MED	11	15	10	60	13	15	12	62
		HIGH	11	15	11	61	13	15	13	63

48FC**04-07 MCA MOCP ELECTRICAL DATA (cont)

48FC UNIT SIZE	NOM. V-PH-Hz	IFM TYPE	w/ POWERED CONVENIENCE OUTLET							
			NO POWER EXHAUST				w/ POWER EXHAUST (powered from unit)			
			MCA	FUSE OR HACR BREAKER	DISCONNECT SIZE		MCA	FUSE OR HACR BREAKER	DISCONNECT SIZE	
					FLA	LRA			FLA	LRA
**04	208/230-3-60	STD	23	30	23	86	25	30	25	88
		MED	24	30	24	88	26	30	27	90
		HIGH	26	30	26	91	28	30	28	93
	460-3-60	STD	12	15	11	43	13	15	12	44
		MED	12	15	12	44	13	15	13	45
		HIGH	12	15	12	44	13	15	13	45
	575-3-60	STD	8	15	8	42	10	15	10	44
		MED	9	15	8	43	11	15	10	45
		HIGH	9	15	9	43	11	15	11	45
**05	208/230-3-60	STD	28	40	28	98	30	40	30	100
		MED	30	40	30	101	32	45	32	103
		HIGH	29	40	29	99	31	40	31	101
	460-3-60	STD	12	15	12	47	13	15	13	48
		MED	13	15	12	47	14	15	13	48
		HIGH	14	15	13	48	15	20	14	49
	575-3-60	STD	10	15	9	39	12	15	12	41
		MED	10	15	10	39	12	15	12	41
		HIGH	11	15	11	40	13	15	13	42
**06	208/230-3-60	STD	33	45	33	128	35	50	35	130
		MED	35	50	36	131	37	50	38	133
		HIGH	33	45	33	128	35	50	35	130
	460-3-60	STD	15	20	14	58	16	20	15	59
		MED	15	20	15	59	16	20	16	60
		HIGH	16	20	16	60	17	20	17	61
	575-3-60	STD	11	15	11	45	13	15	13	47
		MED	12	15	11	45	14	15	13	47
		HIGH	12	15	12	47	14	20	14	49
**07	208/230-3-60	STD	36	50	36	156	38	50	39	158
		MED	33	50	33	151	35	50	35	153
		HIGH	35	50	35	154	37	50	37	156
	460-3-60	STD	16	20	15	73	17	20	16	74
		MED	16	20	16	73	17	25	17	74
		HIGH	17	20	16	74	18	25	18	75
	575-3-60	STD	12	15	12	61	14	20	14	63
		MED	13	15	12	62	15	20	14	64
		HIGH	13	15	13	63	15	20	15	65

Electrical data (cont)

50FC**04 MCA MOCP ELECTRICAL DATA

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER			NO CONVENIENCE OUTLET or UNPOWERED CONVENIENCE OUTLET							
						NO POWER EXHAUST				w/ POWER EXHAUST (powered from unit)			
			CRHEATER ***A00	NOM (kW)	FLA	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
								FLA	LRA			FLA	LRA
**04	208/230-1-60	STD	NONE	—	—	24	30	23	92	26	30	25	94
			323A	3.3/4.4	15.9/18.3	24/27	30/30	23/24	92/92	26/29	30/30	25/27	94/94
			324A	4.9/6.5	23.5/27.1	34/38	35/40	30/35	92/92	36/40	40/45	33/37	94/94
			325A	6.5/8.7	31.4/36.3	43/50	45/50	40/45	92/92	46/52	50/60	42/47	94/94
			326A	7.9/10.5	37.9/43.8	52/59	60/60	47/54	92/92	54/61	60/70	49/56	94/94
			327A	9.8/13.0	46.9/54.2	63/72	70/80	57/66	92/92	65/74	70/80	60/68	94/94
		MED	NONE	—	—	26	30	25	94	28	40	27	96
			323A	3.3/4.4	15.9/18.3	26/29	30/30	25/26	94/94	28/31	40/40	27/28	96/96
			324A	4.9/6.5	23.5/27.1	35/40	40/40	32/36	94/94	38/42	40/45	34/39	96/96
			325A	6.5/8.7	31.4/36.3	45/51	45/60	41/47	94/94	48/54	50/60	43/49	96/96
			326A	7.9/10.5	37.9/43.8	53/61	60/70	49/56	94/94	56/63	60/70	51/58	96/96
			327A	9.8/13.0	46.9/54.2	65/74	70/80	59/68	94/94	67/76	70/80	61/70	96/96
		HIGH	NONE	—	—	27	40	26	97	29	40	29	99
			323A	3.3/4.4	15.9/18.3	28/31	40/40	26/28	97/97	30/33	40/40	29/30	99/99
			324A	4.9/6.5	23.5/27.1	37/42	40/45	34/38	97/97	40/44	40/45	36/40	99/99
			325A	6.5/8.7	31.4/36.3	47/53	50/60	43/49	97/97	50/56	50/60	45/51	99/99
			326A	7.9/10.5	37.9/43.8	55/63	60/70	51/57	97/97	58/65	60/70	53/60	99/99
			327A	9.8/13.0	46.9/54.2	67/76	70/80	61/69	97/97	69/78	70/80	63/72	99/99
	208/230-3-60	STD	NONE	—	—	18	25	17	81	20	25	19	83
			323A	3.3/4.4	9.2/10.6	18/18	25/25	17/17	81/81	20/20	25/25	19/19	83/83
			324A	4.9/6.5	13.6/15.6	21/24	25/25	19/21	81/81	24/26	25/30	21/24	83/83
			325A	6.5/8.7	18.1/20.9	27/30	30/30	24/27	81/81	29/33	30/35	26/30	83/83
			326A	7.9/10.5	21.9/25.3	32/36	35/40	29/33	81/81	34/38	35/40	31/35	83/83
			328A	12.0/16.0	33.4/38.5	46/52	50/60	42/48	81/81	48/55	50/60	44/50	83/83
		MED	NONE	—	—	19	25	19	83	21	30	21	85
			323A	3.3/4.4	9.2/10.6	19/19	25/25	19/19	83/83	21/22	30/30	21/21	85/85
			324A	4.9/6.5	13.6/15.6	23/26	25/30	21/23	83/83	25/28	30/30	23/25	85/85
			325A	6.5/8.7	18.1/20.9	29/32	30/35	26/29	83/83	31/35	35/35	28/31	85/85
			326A	7.9/10.5	21.9/25.3	33/38	35/40	30/34	83/83	36/40	40/40	33/36	85/85
			328A	12.0/16.0	33.4/38.5	48/54	50/60	44/49	83/83	50/57	50/60	46/52	85/85
		HIGH	NONE	—	—	21	30	21	86	23	30	23	88
			323A	3.3/4.4	9.2/10.6	21/21	30/30	21/21	86/86	23/24	30/30	23/23	88/88
			324A	4.9/6.5	13.6/15.6	25/28	30/30	23/25	86/86	27/30	30/30	25/27	88/88
			325A	6.5/8.7	18.1/20.9	31/34	35/35	28/31	86/86	33/37	35/40	30/33	88/88
			326A	7.9/10.5	21.9/25.3	35/40	35/40	32/36	86/86	38/42	40/45	34/38	88/88
			328A	12.0/16.0	33.4/38.5	50/56	50/60	45/51	86/86	52/59	60/60	48/53	88/88
	460-3-60	STD	NONE	—	—	9	15	9	41	10	15	10	42
			333A	6.0	7.2	10	15	9	41	12	15	10	42
			334A	8.8	10.6	15	15	13	41	16	20	14	42
			335A	11.5	13.8	19	20	17	41	20	20	18	42
			336A	14.0	16.8	22	25	20	41	24	25	21	42
		MED	NONE	—	—	10	15	9	42	11	15	10	43
			333A	6.0	7.2	11	15	10	42	12	15	11	43
			334A	8.8	10.6	15	15	14	42	16	20	15	43
			335A	11.5	13.8	19	20	17	42	20	25	18	43
			336A	14.0	16.8	23	25	21	42	24	25	22	43
		HIGH	NONE	—	—	10	15	9	42	11	15	10	43
			333A	6.0	7.2	11	15	10	42	13	15	11	43
			334A	8.8	10.6	16	20	14	42	17	20	15	43
			335A	11.5	13.8	20	20	18	42	21	25	19	43
			336A	14.0	16.8	23	25	21	42	25	25	22	43
	575-3-60	STD	NONE	—	—	7	15	6	40	9	15	8	42
			339A	10.0	9.6	13	15	12	40	16	20	14	42
			340A	15.0	14.4	19	20	17	40	22	25	20	42
		MED	NONE	—	—	7	15	6	41	9	15	9	43
			339A	10.0	9.6	14	15	12	41	16	20	14	43
			340A	15.0	14.4	20	20	18	41	22	25	20	43
		HIGH	NONE	—	—	7	15	7	41	9	15	9	43
			339A	10.0	9.6	14	15	13	41	17	20	15	43
			340A	15.0	14.4	20	20	18	41	23	25	20	43

50FC**04 MCA MOCP ELECTRICAL DATA (cont)

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER			w/ POWERED CONVENIENCE OUTLET							
						NO POWER EXHAUST				w/ POWER EXHAUST (powered from unit)			
			CRHEATER ***A00	NOM (kW)	FLA	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
								FLA	LRA			FLA	LRA
**04	208/230-3-60	STD	NONE	—	—	23	30	23	86	25	30	25	88
			323A	3.3/4.4	9.2/10.6	23/23	30/30	23/23	86/86	25/26	30/30	25/25	88/88
			324A	4.9/6.5	13.6/15.6	27/30	30/30	25/27	86/86	30/32	30/35	27/29	88/88
			325A	6.5/8.7	18.1/20.9	33/36	35/40	30/33	86/86	35/39	35/40	32/35	88/88
			326A	7.9/10.5	21.9/25.3	38/42	40/45	34/38	86/86	40/44	40/45	36/40	88/88
			328A	12.0/16.0	33.4/38.5	52/58	60/60	47/53	86/86	54/61	60/70	50/55	88/88
		MED	NONE	—	—	24	30	24	88	26	30	27	90
			323A	3.3/4.4	9.2/10.6	24/25	30/30	24/24	88/88	26/28	30/30	27/27	90/90
			324A	4.9/6.5	13.6/15.6	29/32	30/35	26/29	88/88	31/34	35/35	29/31	90/90
			325A	6.5/8.7	18.1/20.9	35/38	35/40	32/35	88/88	37/41	40/45	34/37	90/90
			326A	7.9/10.5	21.9/25.3	39/44	40/45	36/40	88/88	42/46	45/50	38/42	90/90
			328A	12.0/16.0	33.4/38.5	54/60	60/60	49/55	88/88	56/63	60/70	51/57	90/90
		HIGH	NONE	—	—	26	30	26	91	28	30	28	93
			323A	3.3/4.4	9.2/10.6	26/27	30/30	26/26	91/91	28/30	30/30	28/28	93/93
			324A	4.9/6.5	13.6/15.6	31/34	35/35	28/30	91/91	33/36	35/40	30/33	93/93
			325A	6.5/8.7	18.1/20.9	37/40	40/40	33/37	91/91	39/43	40/45	36/39	93/93
			326A	7.9/10.5	21.9/25.3	41/46	45/50	38/42	91/91	44/48	45/50	40/44	93/93
			328A	12.0/16.0	33.4/38.5	56/62	60/70	51/57	91/91	58/65	60/70	53/59	93/93
	460-3-60	STD	NONE	—	—	12	15	11	43	13	15	12	44
			333A	6.0	7.2	13	15	12	43	14	15	13	44
			334A	8.8	10.6	17	20	16	43	19	20	17	44
			335A	11.5	13.8	21	25	19	43	23	25	20	44
			336A	14.0	16.8	25	25	23	43	26	30	24	44
		MED	NONE	—	—	12	15	12	44	13	15	13	45
			333A	6.0	7.2	14	15	12	44	15	15	13	45
			334A	8.8	10.6	18	20	16	44	19	20	17	45
			335A	11.5	13.8	22	25	20	44	23	25	21	45
			336A	14.0	16.8	26	30	23	44	27	30	24	45
		HIGH	NONE	—	—	12	15	12	44	13	15	13	45
			333A	6.0	7.2	14	15	13	44	15	15	14	45
			334A	8.8	10.6	18	20	16	44	20	20	18	45
			335A	11.5	13.8	22	25	20	44	24	25	21	45
			336A	14.0	16.8	26	30	24	44	27	30	25	45
	575-3-60	STD	NONE	—	—	8	15	8	42	10	15	10	44
			339A	10.0	9.6	16	20	14	42	18	20	16	44
			340A	15.0	14.4	22	25	19	42	24	25	22	44
		MED	NONE	—	—	9	15	8	43	11	15	10	45
			339A	10.0	9.6	16	20	14	43	18	20	16	45
			340A	15.0	14.4	22	25	20	43	24	25	22	45
		HIGH	NONE	—	—	9	15	9	43	11	15	11	45
			339A	10.0	9.6	16	20	15	43	19	20	17	45
			340A	15.0	14.4	22	25	20	43	25	25	22	45

Electrical data (cont)

50FC**05 MCA MOCP ELECTRICAL DATA

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER			NO CONVENIENCE OUTLET or UNPOWERED CONVENIENCE OUTLET							
						NO POWER EXHAUST				w/ POWER EXHAUST (powered from unit)			
			CRHEATER ***A00	NOM (kW)	FLA	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
								FLA	LRA			FLA	LRA
**05	208/230-1-60	STD	NONE	—	—	31	50	29	140	33	50	32	142
			323A	3.3/4.4	15.9/18.3	31/31	50/50	29/29	140/140	33/33	50/50	32/32	142/142
			325A	6.5/8.7	31.4/36.3	45/51	50/60	41/47	140/140	48/54	50/60	43/49	142/142
			327A	9.8/13.0	46.9/54.2	65/74	70/80	59/68	140/140	67/76	70/80	61/70	142/142
			329A	13.1/17.4	62.8/72.5	85/97	90/100	77/89	140/140	87/99	90/100	80/91	142/142
			330A*	14.4/19.2	69.3/80.0	93/106	100/110	85/97	140/140	95/108	100/110	87/99	142/142
			331A†	15.8/21.0	75.8/87.5	101/115	110/125	92/106	140/140	103/118	110/125	95/108	142/142
		MED	NONE	—	—	33	50	31	143	34	50	33	145
			323A	3.3/4.4	15.9/18.3	33/33	50/50	31/31	143/143	34/34	50/50	33/33	145/145
			325A	6.5/8.7	31.4/36.3	47/53	50/60	43/49	143/143	50/56	50/60	45/51	145/145
			327A	9.8/13.0	46.9/54.2	67/76	70/80	61/69	143/143	69/78	70/80	63/72	145/145
			329A	13.1/17.4	62.8/72.5	87/99	90/100	79/90	143/143	89/101	90/110	81/93	145/145
			330A*	14.4/19.2	69.3/80.0	95/108	100/110	87/99	143/143	97/110	100/125	89/101	145/145
			331A†	15.8/21.0	75.8/87.5	103/117	110/125	94/108	143/143	105/120	110/125	96/110	145/145
		HIGH	NONE	—	—	35	50	34	146	37	50	37	148
			323A	3.3/4.4	15.9/18.3	35/35	50/50	34/34	146/146	37/37	50/50	37/37	148/148
			325A	6.5/8.7	31.4/36.3	51/57	60/60	46/52	146/146	53/59	60/60	48/54	148/148
			327A	9.8/13.0	46.9/54.2	70/79	70/80	64/72	146/146	72/82	80/90	66/75	148/148
			329A	13.1/17.4	62.8/72.5	90/102	90/110	82/93	146/146	92/104	100/110	85/96	148/148
			330A*	14.4/19.2	69.3/80.0	98/111	100/125	90/102	146/146	100/114	110/125	92/104	148/148
			331A†	15.8/21.0	75.8/87.5	106/121	110/125	97/111	146/146	109/123	110/125	99/113	148/148
	208/230-3-60	STD	NONE	—	—	24	30	23	93	25	30	25	95
			324A	4.9/6.5	13.6/15.6	24/26	30/30	23/23	93/93	25/28	30/30	25/25	95/95
			325A	6.5/8.7	18.1/20.9	29/32	30/35	26/29	93/93	31/35	35/35	28/31	95/95
			328A	12.0/16.0	33.4/38.5	48/54	50/60	44/49	93/93	50/57	50/60	46/52	95/95
			330A*	14.4/19.2	40.0/46.2	56/64	60/70	51/58	93/93	58/66	60/70	53/60	95/95
			331A†	15.8/21.0	43.8/50.5	61/69	70/70	56/63	93/93	63/72	70/80	58/65	95/95
		MED	NONE	—	—	25	30	24	96	27	40	27	98
			324A	4.9/6.5	13.6/15.6	25/28	30/30	24/25	96/96	27/30	40/40	27/27	98/98
			325A	6.5/8.7	18.1/20.9	31/34	35/35	28/31	96/96	33/37	40/40	30/33	98/98
			328A	12.0/16.0	33.4/38.5	50/56	50/60	45/51	96/96	52/59	60/60	48/53	98/98
			330A*	14.4/19.2	40.0/46.2	58/66	60/70	53/60	96/96	60/68	60/70	55/62	98/98
			331A†	15.8/21.0	43.8/50.5	63/71	70/80	57/65	96/96	65/74	70/80	60/67	98/98
		HIGH	NONE	—	—	24	30	23	94	26	30	26	96
			324A	4.9/6.5	13.6/15.6	24/26	30/30	23/24	94/94	26/29	30/30	26/26	96/96
			325A	6.5/8.7	18.1/20.9	29/33	30/35	27/30	94/94	32/35	35/35	29/32	96/96
			328A	12.0/16.0	33.4/38.5	49/55	50/60	44/50	94/94	51/57	60/60	46/52	96/96
			330A*	14.4/19.2	40.0/46.2	57/65	60/70	52/59	94/94	59/67	60/70	54/61	96/96
			331A†	15.8/21.0	43.8/50.5	62/70	70/70	56/64	94/94	64/72	70/80	58/66	96/96
	460-3-60	STD	NONE	—	—	10	15	9	45	11	15	11	46
			333A	6.0	7.2	11	15	10	45	12	15	11	46
			335A	11.5	13.8	19	20	17	45	20	25	18	46
			336A	14.0	16.8	23	25	21	45	24	25	22	46
			337A	21.5	25.9	34	35	31	45	36	40	32	46
		MED	NONE	—	—	11	15	10	45	12	15	11	46
			333A	6.0	7.2	11	15	10	45	13	15	11	46
			335A	11.5	13.8	20	20	18	45	21	25	19	46
			336A	14.0	16.8	23	25	21	45	25	25	22	46
			337A	21.5	25.9	35	35	32	45	36	40	33	46
		HIGH	NONE	—	—	11	15	11	46	12	15	12	47
			333A	6.0	7.2	12	15	11	46	14	15	12	47
			335A	11.5	13.8	21	25	19	46	22	25	20	47
			336A	14.0	16.8	24	25	22	46	26	30	23	47
			337A	21.5	25.9	36	40	33	46	37	40	34	47

50FC**05 MCA MOCP ELECTRICAL DATA (cont)

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER			NO CONVENIENCE OUTLET or UNPOWERED CONVENIENCE OUTLET							
						NO POWER EXHAUST				w/ POWER EXHAUST (powered from unit)			
			CRHEATER ***A00	NOM (kW)	FLA	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
								FLA	LRA			FLA	LRA
**05 (cont)	575-3-60	STD	NONE	—	—	8	15	7	37	10	15	10	39
			339A	10.0	9.6	14	15	12	37	16	20	14	39
			340A	15.0	14.4	20	20	18	37	22	25	20	39
		MED	NONE	—	—	9	15	8	37	10	15	10	39
			339A	10.0	9.6	14	15	13	37	17	20	15	39
			340A	15.0	14.4	20	20	18	37	23	25	20	39
		HIGH	NONE	—	—	9	15	9	38	11	15	11	40
			339A	10.0	9.6	15	15	14	38	18	20	16	40
			340A	15.0	14.4	21	25	19	38	24	25	21	40

*Do not use with size 05 horizontal duct configuration units.

†Do not use with size 05 vertical duct configuration units.

Electrical data (cont)

50FC**05 MCA MOCP ELECTRICAL DATA (cont)

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER			w/ POWERED CONVENIENCE OUTLET							
						NO POWER EXHAUST				w/ POWER EXHAUST (powered from unit)			
			CRHEATER ***A00	NOM (kW)	FLA	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
								FLA	LRA			FLA	LRA
**05	208/230-3-60	STD	NONE	—	—	28	40	28	98	30	40	30	100
			324A	4.9/6.5	13.6/15.6	29/32	40/40	28/29	98/98	31/34	40/40	30/31	100/100
			325A	6.5/8.7	18.1/20.9	35/38	40/40	32/35	98/98	37/41	40/45	34/37	100/100
			328A	12.0/16.0	33.4/38.5	54/60	60/60	49/55	98/98	56/63	60/70	51/57	100/100
			330A*	14.4/19.2	40.0/46.2	62/70	70/70	57/64	98/98	64/72	70/80	59/66	100/100
			331A†	15.8/21.0	43.8/50.5	67/75	70/80	61/69	98/98	69/78	70/80	63/71	100/100
		MED	NONE	—	—	30	40	30	101	32	45	32	103
			324A	4.9/6.5	13.6/15.6	31/34	40/40	30/30	101/101	33/36	45/45	32/33	103/103
			325A	6.5/8.7	18.1/20.9	37/40	40/40	33/37	101/101	39/43	45/45	36/39	103/103
			328A	12.0/16.0	33.4/38.5	56/62	60/70	51/57	101/101	58/65	60/70	53/59	103/103
			330A*	14.4/19.2	40.0/46.2	64/72	70/80	59/66	101/101	66/74	70/80	61/68	103/103
			331A†	15.8/21.0	43.8/50.5	69/77	70/80	63/71	101/101	71/80	80/80	65/73	103/103
		HIGH	NONE	—	—	29	40	29	99	31	40	31	101
			324A	4.9/6.5	13.6/15.6	30/32	40/40	29/29	99/99	32/35	40/40	31/32	101/101
			325A	6.5/8.7	18.1/20.9	35/39	40/40	32/35	99/99	38/41	40/45	34/38	101/101
			328A	12.0/16.0	33.4/38.5	55/61	60/70	50/56	99/99	57/63	60/70	52/58	101/101
			330A*	14.4/19.2	40.0/46.2	63/71	70/80	57/65	99/99	65/73	70/80	60/67	101/101
			331A†	15.8/21.0	43.8/50.5	68/76	70/80	62/69	99/99	70/78	70/80	64/72	101/101
	460-3-60	STD	NONE	—	—	12	15	12	47	13	15	13	48
			333A	6.0	7.2	14	15	12	47	15	15	13	48
			335A	11.5	13.8	22	25	20	47	23	25	21	48
			336A	14.0	16.8	26	30	23	47	27	30	24	48
			337A	21.5	25.9	37	40	34	47	38	40	35	48
		MED	NONE	—	—	13	15	12	47	14	15	13	48
			333A	6.0	7.2	14	15	13	47	15	15	14	48
			335A	11.5	13.8	22	25	20	47	24	25	21	48
			336A	14.0	16.8	26	30	24	47	27	30	25	48
			337A	21.5	25.9	37	40	34	47	39	40	35	48
		HIGH	NONE	—	—	14	15	13	48	15	20	14	49
			333A	6.0	7.2	15	15	14	48	16	20	15	49
			335A	11.5	13.8	23	25	21	48	25	25	22	49
			336A	14.0	16.8	27	30	25	48	28	30	26	49
			337A	21.5	25.9	39	40	35	48	40	40	36	49
	575-3-60	STD	NONE	—	—	10	15	9	39	12	15	12	41
			339A	10.0	9.6	16	20	14	39	18	20	16	41
			340A	15.0	14.4	22	25	20	39	24	25	22	41
		MED	NONE	—	—	10	15	10	39	12	15	12	41
			339A	10.0	9.6	16	20	15	39	19	20	17	41
			340A	15.0	14.4	22	25	20	39	25	25	22	41
		HIGH	NONE	—	—	11	15	11	40	13	15	13	42
			339A	10.0	9.6	17	20	16	40	20	20	18	42
			340A	15.0	14.4	23	25	21	40	26	30	23	42

*Do not use with size 05 horizontal duct configuration units.

†Do not use with size 05 vertical duct configuration units.

50FC**06 MCA MOCP ELECTRICAL DATA

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER			NO CONVENIENCE OUTLET or UNPOWERED CONVENIENCE OUTLET							
						NO POWER EXHAUST				w/ POWER EXHAUST (powered from unit)			
			CRHEATER ***A00	NOM (kW)	FLA	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
								FLA	LRA			FLA	LRA
**06	208/230-1-60	STD	NONE	—	—	39	60	37	157	41	60	39	159
			324A	4.9/6.5	23.5/27.1	39/42	60/60	37/39	157/157	41/45	60/60	39/41	159/159
			325A	6.5/8.7	31.4/36.3	48/54	60/60	43/49	157/157	50/56	60/60	46/51	159/159
			327A	9.8/13.0	46.9/54.2	67/76	70/80	61/70	157/157	69/79	70/80	63/72	159/159
			329A	13.1/17.4	62.8/72.5	87/99	90/100	80/91	157/157	89/101	90/110	82/93	159/159
			331A	15.8/21.0	75.8/87.5	103/118	110/125	95/108	157/157	106/120	110/125	97/110	159/159
		MED	NONE	—	—	41	60	40	160	43	60	42	162
			324A	4.9/6.5	23.5/27.1	41/45	60/60	40/41	160/160	43/47	60/60	42/43	162/162
			325A	6.5/8.7	31.4/36.3	50/57	60/60	46/52	160/160	53/59	60/60	48/54	162/162
			327A	9.8/13.0	46.9/54.2	70/79	70/80	64/72	160/160	72/81	80/90	66/74	162/162
			329A	13.1/17.4	62.8/72.5	90/102	90/110	82/93	160/160	92/104	100/110	84/95	162/162
			331A	15.8/21.0	75.8/87.5	106/121	110/125	97/111	160/160	108/123	110/125	99/113	162/162
	208/230-3-60	STD	NONE	—	—	28	40	27	123	30	45	30	125
			324A	4.9/6.5	13.6/15.6	28/28	40/40	27/27	123/123	30/30	45/45	30/30	125/125
			326A	7.9/10.5	21.9/25.3	36/40	40/40	33/36	123/123	38/42	45/45	35/39	125/125
			328A	12.0/16.0	33.4/38.5	50/57	50/60	46/52	123/123	53/59	60/60	48/54	125/125
			331A	15.8/21.0	43.8/50.5	63/72	70/80	58/65	123/123	66/74	70/80	60/68	125/125
			332A	18.4/24.5	51.1/58.9	72/82	80/90	66/75	123/123	75/84	80/90	68/77	125/125
		MED	NONE	—	—	31	45	30	126	32	45	32	128
			324A	4.9/6.5	13.6/15.6	31/31	45/45	30/30	126/126	32/33	45/45	32/32	128/128
			326A	7.9/10.5	21.9/25.3	39/43	45/45	35/39	126/126	41/45	45/45	37/41	128/128
			328A	12.0/16.0	33.4/38.5	53/59	60/60	48/54	126/126	55/62	60/70	50/56	128/128
			331A	15.8/21.0	43.8/50.5	66/74	70/80	60/68	126/126	68/77	70/80	62/70	128/128
			332A	18.4/24.5	51.1/58.9	75/85	80/90	69/78	126/126	77/87	80/90	71/80	128/128
		HIGH	NONE	—	—	28	40	27	123	30	45	30	125
			324A	4.9/6.5	13.6/15.6	28/28	40/40	27/27	123/123	30/30	45/45	30/30	125/125
			326A	7.9/10.5	21.9/25.3	36/40	40/40	33/36	123/123	38/42	45/45	35/39	125/125
			328A	12.0/16.0	33.4/38.5	50/57	50/60	46/52	123/123	53/59	60/60	48/54	125/125
			331A	15.8/21.0	43.8/50.5	63/72	70/80	58/65	123/123	66/74	70/80	60/68	125/125
			332A	18.4/24.5	51.1/58.9	72/82	80/90	66/75	123/123	75/84	80/90	68/77	125/125
	460-3-60	STD	NONE	—	—	13	15	12	56	14	20	13	57
			333A	6.0	7.2	13	15	12	56	14	20	13	57
			335A	11.5	13.8	20	20	18	56	21	25	19	57
			336A	14.0	16.8	23	25	21	56	25	25	22	57
			337A	21.5	25.9	35	35	32	56	36	40	33	57
			338A	24.0	28.9	38	40	35	56	40	40	36	57
		MED	NONE	—	—	13	20	12	57	14	20	13	58
			333A	6.0	7.2	13	20	12	57	14	20	13	58
			335A	11.5	13.8	20	20	18	57	21	25	19	58
			336A	14.0	16.8	24	25	22	57	25	25	23	58
			337A	21.5	25.9	35	35	32	57	36	40	33	58
			338A	24.0	28.9	39	40	35	57	40	40	37	58
		HIGH	NONE	—	—	14	20	13	58	15	20	14	59
			333A	6.0	7.2	14	20	13	58	15	20	14	59
			335A	11.5	13.8	21	25	19	58	23	25	20	59
			336A	14.0	16.8	25	25	23	58	26	30	24	59
			337A	21.5	25.9	36	40	33	58	38	40	34	59
			338A	24.0	28.9	40	40	37	58	41	45	38	59
	575-3-60	STD	NONE	—	—	10	15	9	43	12	15	11	45
			340A	15.0	14.4	20	20	18	43	23	25	20	45
			341A	25.0	24.1	32	35	29	43	35	35	32	45
		MED	NONE	—	—	10	15	9	43	12	15	12	45
			340A	15.0	14.4	21	25	19	43	23	25	21	45
			341A	25.0	24.1	33	35	30	43	35	35	32	45
		HIGH	NONE	—	—	11	15	10	45	13	15	12	47
			340A	15.0	14.4	22	25	19	45	24	25	22	47
			341A	25.0	24.1	34	35	31	45	36	40	33	47

Electrical data (cont)

50FC**06 MCA MOCP ELECTRICAL DATA (cont)

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER			w/ POWERED CONVENIENCE OUTLET							
						NO POWER EXHAUST				w/ POWER EXHAUST (powered from unit)			
			CRHEATER ***A00	NOM (kW)	FLA	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
								FLA	LRA			FLA	LRA
**06	208/230-3-60	STD	NONE	—	—	33	45	33	128	35	50	35	130
			324A	4.9/6.5	13.6/15.6	33/34	45/45	33/33	128/128	35/36	50/50	35/35	130/130
			326A	7.9/10.5	21.9/25.3	42/46	45/50	38/42	128/128	44/48	50/50	40/44	130/130
			328A	12.0/16.0	33.4/38.5	56/63	60/70	51/57	128/128	59/65	60/70	53/59	130/130
			331A	15.8/21.0	43.8/50.5	69/78	70/80	63/71	128/128	72/80	80/80	65/73	130/130
			332A	18.4/24.5	51.1/58.9	78/88	80/90	72/81	128/128	81/90	90/100	74/83	130/130
		MED	NONE	—	—	35	50	36	131	37	50	38	133
			324A	4.9/6.5	13.6/15.6	35/37	50/50	36/36	131/131	37/39	50/50	38/38	133/133
			326A	7.9/10.5	21.9/25.3	45/49	50/50	41/45	131/131	47/51	50/60	43/47	133/133
			328A	12.0/16.0	33.4/38.5	59/65	60/70	54/60	131/131	61/68	70/70	56/62	133/133
			331A	15.8/21.0	43.8/50.5	72/80	80/80	66/73	131/131	74/83	80/90	68/76	133/133
			332A	18.4/24.5	51.1/58.9	81/91	90/100	74/83	131/131	83/93	90/100	76/85	133/133
		HIGH	NONE	—	—	33	45	33	128	35	50	35	130
			324A	4.9/6.5	13.6/15.6	33/34	45/45	33/33	128/128	35/36	50/50	35/35	130/130
			326A	7.9/10.5	21.9/25.3	42/46	45/50	38/42	128/128	44/48	50/50	40/44	130/130
			328A	12.0/16.0	33.4/38.5	56/63	60/70	51/57	128/128	59/65	60/70	53/59	130/130
			331A	15.8/21.0	43.8/50.5	69/78	70/80	63/71	128/128	72/80	80/80	65/73	130/130
			332A	18.4/24.5	51.1/58.9	78/88	80/90	72/81	128/128	81/90	90/100	74/83	130/130
	460-3-60	STD	NONE	—	—	15	20	14	58	16	20	15	59
			333A	6.0	7.2	15	20	14	58	16	20	15	59
			335A	11.5	13.8	22	25	20	58	24	25	21	59
			336A	14.0	16.8	26	30	24	58	27	30	25	59
			337A	21.5	25.9	37	40	34	58	39	40	35	59
			338A	24.0	28.9	41	45	37	58	42	45	39	59
		MED	NONE	—	—	15	20	15	59	16	20	16	60
			333A	6.0	7.2	15	20	15	59	16	20	16	60
			335A	11.5	13.8	23	25	21	59	24	25	22	60
			336A	14.0	16.8	27	30	24	59	28	30	25	60
			337A	21.5	25.9	38	40	35	59	39	40	36	60
			338A	24.0	28.9	42	45	38	59	43	45	39	60
		HIGH	NONE	—	—	16	20	16	60	17	20	17	61
			333A	6.0	7.2	16	20	16	60	17	20	17	61
			335A	11.5	13.8	24	25	22	60	25	25	23	61
			336A	14.0	16.8	28	30	25	60	29	30	26	61
			337A	21.5	25.9	39	40	36	60	40	45	37	61
			338A	24.0	28.9	43	45	39	60	44	45	40	61
	575-3-60	STD	NONE	—	—	11	15	11	45	13	15	13	47
			340A	15.0	14.4	22	25	20	45	25	25	22	47
			341A	25.0	24.1	35	35	31	45	37	40	34	47
		MED	NONE	—	—	12	15	11	45	14	15	13	47
			340A	15.0	14.4	23	25	21	45	25	25	23	47
			341A	25.0	24.1	35	35	32	45	37	40	34	47
		HIGH	NONE	—	—	12	15	12	47	14	20	14	49
			340A	15.0	14.4	24	25	21	47	26	30	24	49
			341A	25.0	24.1	36	40	33	47	38	40	35	49

50FC**07 MCA MOCP ELECTRICAL DATA

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER			NO CONVENIENCE OUTLET or UNPOWERED CONVENIENCE OUTLET							
						NO POWER EXHAUST				w/ POWER EXHAUST (powered from unit)			
			CRHEATER ***A00	NOM (kW)	FLA	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
								FLA	LRA			FLA	LRA
**07	208/230-3-60	STD	NONE	—	—	32	45	31	151	34	50	33	153
			324A	4.9/6.5	13.6/15.6	32/32	45/45	31/31	151/151	34/34	50/50	33/33	153/153
			326A	7.9/10.5	21.9/25.3	38/42	45/45	34/38	151/151	40/44	50/50	36/40	153/153
			328A	12.0/16.0	33.4/38.5	52/58	60/60	47/53	151/151	54/61	60/70	50/55	153/153
			331A	15.8/21.0	43.8/50.5	65/73	70/80	59/67	151/151	67/76	70/80	62/69	153/153
			332A	18.4/24.5	51.1/58.9	74/84	80/90	68/77	151/151	76/86	80/90	70/79	153/153
		MED	NONE	—	—	28	45	27	146	30	45	29	148
			324A	4.9/6.5	13.6/15.6	28/28	45/45	27/27	146/146	30/30	45/45	29/29	148/148
			326A	7.9/10.5	21.9/25.3	33/38	45/45	30/34	146/146	36/40	45/45	33/36	148/148
			328A	12.0/16.0	33.4/38.5	48/54	50/60	44/49	146/146	50/57	50/60	46/52	148/148
			331A	15.8/21.0	43.8/50.5	61/69	70/70	56/63	146/146	63/72	70/80	58/65	148/148
			332A	18.4/24.5	51.1/58.9	70/80	70/80	64/73	146/146	72/82	80/90	66/75	148/148
		HIGH	NONE	—	—	30	45	29	149	32	45	31	151
			324A	4.9/6.5	13.6/15.6	30/30	45/45	29/29	149/149	32/32	45/45	31/31	151/151
			326A	7.9/10.5	21.9/25.3	36/40	45/45	33/36	149/149	38/42	45/45	35/39	151/151
			328A	12.0/16.0	33.4/38.5	50/57	50/60	46/52	149/149	53/59	60/60	48/54	151/151
			331A	15.8/21.0	43.8/50.5	63/72	70/80	58/65	149/149	66/74	70/80	60/68	151/151
			332A	18.4/24.5	51.1/58.9	72/82	80/90	66/75	149/149	75/84	80/90	68/77	151/151
	460-3-60	STD	NONE	—	—	14	20	13	71	15	20	14	72
			333A	6.0	7.2	14	20	13	71	15	20	14	72
			335A	11.5	13.8	20	20	18	71	21	25	19	72
			336A	14.0	16.8	24	25	21	71	25	25	23	72
			337A	21.5	25.9	35	35	32	71	36	40	33	72
			338A	24.0	28.9	39	40	35	71	40	40	36	72
		MED	NONE	—	—	14	20	13	71	15	20	14	72
			333A	6.0	7.2	14	20	13	71	15	20	14	72
			335A	11.5	13.8	20	25	18	71	22	25	20	72
			336A	14.0	16.8	24	25	22	71	25	30	23	72
			337A	21.5	25.9	36	40	32	71	37	40	33	72
			338A	24.0	28.9	39	40	36	71	41	45	37	72
		HIGH	NONE	—	—	15	20	14	72	16	20	15	73
			333A	6.0	7.2	15	20	14	72	16	20	15	73
			335A	11.5	13.8	21	25	19	72	23	25	20	73
			336A	14.0	16.8	25	25	23	72	26	30	24	73
			337A	21.5	25.9	36	40	33	72	38	40	34	73
			338A	24.0	28.9	40	40	37	72	41	45	38	73
	575-3-60	STD	NONE	—	—	11	15	10	59	13	15	12	61
			340A	15.0	14.4	21	25	19	59	23	25	21	61
			341A	25.0	24.1	33	35	30	59	35	35	32	61
		MED	NONE	—	—	11	15	10	60	13	15	12	62
			340A	15.0	14.4	21	25	19	60	23	25	21	62
			341A	25.0	24.1	33	35	30	60	35	40	32	62
		HIGH	NONE	—	—	11	15	11	61	13	15	13	63
			340A	15.0	14.4	22	25	19	61	24	25	22	63
			341A	25.0	24.1	34	35	31	61	36	40	33	63

Electrical data (cont)

50FC**07 MCA MOCP ELECTRICAL DATA (cont)

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER			w/ POWERED CONVENIENCE OUTLET							
						NO POWER EXHAUST				w/ POWER EXHAUST (powered from unit)			
			CRHEATER ***A00	NOM (kW)	FLA	MCA	FUSE OR HACR BRKR	DISCONNECT SIZE		MCA	FUSE OR HACR BRKR	DISCONNECT SIZE	
								FLA	LRA			FLA	LRA
**07	208/230-3-60	STD	NONE	—	—	36	50	36	156	38	50	39	158
			324A	4.9/6.5	13.6/15.6	36/36	50/50	36/36	156/156	38/38	50/50	39/39	158/158
			326A	7.9/10.5	21.9/25.3	44/48	50/50	40/44	156/156	46/50	50/50	42/46	158/158
			328A	12.0/16.0	33.4/38.5	58/64	60/70	53/59	156/156	60/67	60/70	55/61	158/158
			331A	15.8/21.0	43.8/50.5	71/79	80/80	65/73	156/156	73/82	80/90	67/75	158/158
			332A	18.4/24.5	51.1/58.9	80/90	80/90	73/82	156/156	82/92	90/100	75/84	158/158
		MED	NONE	—	—	33	50	33	151	35	50	35	153
			324A	4.9/6.5	13.6/15.6	33/33	50/50	33/33	151/151	35/35	50/50	35/35	153/153
			326A	7.9/10.5	21.9/25.3	39/44	50/50	36/40	151/151	42/46	50/50	38/42	153/153
			328A	12.0/16.0	33.4/38.5	54/60	60/60	49/55	151/151	56/63	60/70	51/57	153/153
			331A	15.8/21.0	43.8/50.5	67/75	70/80	61/69	151/151	69/78	70/80	63/71	153/153
			332A	18.4/24.5	51.1/58.9	76/86	80/90	69/78	151/151	78/88	80/90	72/81	153/153
		HIGH	NONE	—	—	35	50	35	154	37	50	37	156
			324A	4.9/6.5	13.6/15.6	35/35	50/50	35/35	154/154	37/37	50/50	37/37	156/156
			326A	7.9/10.5	21.9/25.3	42/46	50/50	38/42	154/154	44/48	50/50	40/44	156/156
			328A	12.0/16.0	33.4/38.5	56/63	60/70	51/57	154/154	59/65	60/70	53/59	156/156
			331A	15.8/21.0	43.8/50.5	69/78	70/80	63/71	154/154	72/80	80/80	65/73	156/156
			332A	18.4/24.5	51.1/58.9	78/88	80/90	72/81	154/154	81/90	90/100	74/83	156/156
	460-3-60	STD	NONE	—	—	16	20	15	73	17	20	16	74
			333A	6.0	7.2	16	20	15	73	17	20	16	74
			335A	11.5	13.8	23	25	20	73	24	25	22	74
			336A	14.0	16.8	26	30	24	73	28	30	25	74
			337A	21.5	25.9	38	40	34	73	39	40	36	74
			338A	24.0	28.9	42	45	38	73	43	45	39	74
		MED	NONE	—	—	16	20	16	73	17	25	17	74
			333A	6.0	7.2	16	20	16	73	17	25	17	74
			335A	11.5	13.8	23	25	21	73	24	25	22	74
			336A	14.0	16.8	27	30	24	73	28	30	26	74
			337A	21.5	25.9	38	40	35	73	40	40	36	74
			338A	24.0	28.9	42	45	38	73	43	45	39	74
		HIGH	NONE	—	—	17	20	16	74	18	25	18	75
			333A	6.0	7.2	17	20	16	74	18	25	18	75
			335A	11.5	13.8	24	25	22	74	25	25	23	75
			336A	14.0	16.8	28	30	25	74	29	30	26	75
			337A	21.5	25.9	39	40	36	74	40	45	37	75
			338A	24.0	28.9	43	45	39	74	44	45	40	75
	575-3-60	STD	NONE	—	—	12	15	12	61	14	20	14	63
			340A	15.0	14.4	23	25	20	61	25	25	23	63
			341A	25.0	24.1	35	35	32	61	37	40	34	63
		MED	NONE	—	—	12	15	12	61	14	20	14	63
			340A	15.0	14.4	23	25	20	61	25	25	23	63
			341A	25.0	24.1	35	35	32	61	37	40	34	63
		HIGH	NONE	—	—	13	15	13	63	15	20	15	65
			340A	15.0	14.4	24	25	21	63	26	30	24	65
			341A	25.0	24.1	36	40	33	63	38	40	35	65

50FC**04 ELECTRIC HEAT DATA — WITHOUT NON-FUSED DISCONNECT

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION PART NUMBER CRSINGLEXXXA00			
							NO C.O. OR UNPOWERED C.O.		w/PWRD C.O.	
							NO P.E.	w/P.E. (pwrd fr/unit)	NO P.E	w/P.E. (pwrd fr/unit)
**04	208/230-1-60	STD	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	—	—	—	—
			CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	—	037	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	037	040	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
		MED	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	—	—	—	—
			CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	040	040	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
		HIGH	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	—	—	—	—
			CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	040	040	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
	208/230-3-60	STD	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	—	—	—	—
			CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	—	—	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	—	—	—	—
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	037	038
		MED	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	—	—	—	—
			CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	—	—	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	—	—	—	—
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	037	038
		HIGH	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	—	—	—	—
			CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	—	—	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	—	—	—	—
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	038	038
	460-3-60	STD	CRHEATER333A00	6.0	5.5	18.8	—	—	——	—
			CRHEATER334A00	8.8	8.1	27.6	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
		MED	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER334A00	8.8	8.1	27.6	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
		HIGH	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER334A00	8.8	8.1	27.6	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
	575-3-60	STD	CRHEATER339A00	10.0	9.2	31.3	—	—	—	—
			CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
		MED	CRHEATER339A00	10.0	9.2	31.3	—	—	—	—
			CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
		HIGH	CRHEATER339A00	10.0	9.2	31.3	—	—	—	—
			CRHEATER340A00	15.0	13.8	47.0	—	—	—	—

Electrical data (cont)

50FC**04 ELECTRIC HEAT DATA — WITH NON-FUSED DISCONNECT

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION PART NUMBER CRSINGLEXXXA00			
							NO C.O. OR UNPOWERED C.O.		w/PWRD C.O.	
							NO P.E.	w/P.E. (pwrd fr/unit)	NO P.E	w/P.E. (pwrd fr/unit)
**04	208/230-1-60	STD	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	037	037	—	—
			CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	037	040	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
		MED	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	037	037	—	—
			CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	040	040	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
		HIGH	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	037	037	—	—
			CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	040	040	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
	208/230-3-60	STD	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	037	037	037	037
			CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	037	037
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	037	037
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	037	037	037	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	037	038
		MED	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	037	037	037	037
			CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	037	037
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	037	037
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	037	037	037	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	037	038
		HIGH	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	037	037	037	037
			CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	037	037
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	037	037
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	037	037	037	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	038	038
	460-3-60	STD	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER334A00	8.8	8.1	27.6	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
		MED	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER334A00	8.8	8.1	27.6	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
		HIGH	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER334A00	8.8	8.1	27.6	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
	575-3-60	STD	CRHEATER339A00	10.0	9.2	31.3	—	—	—	—
			CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
		MED	CRHEATER339A00	10.0	9.2	31.3	—	—	—	—
			CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
		HIGH	CRHEATER339A00	10.0	9.2	31.3	—	—	—	—
			CRHEATER340A00	15.0	13.8	47.0	—	—	—	—

50FC**05 ELECTRIC HEAT DATA — WITHOUT NON-FUSED DISCONNECT

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION PART NUMBER CRSINGLEXXXA00			
							NO C.O. OR UNPOWERED C.O.		w/PWRD C.O.	
							NO P.E.	w/P.E. (pwrd fr/unit)	NO P.E	w/P.E. (pwrd fr/unit)
**05	208/230-1-60	STD	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
			CRHEATER329A00	17.4	13.1/16.0	44.6/54.5	040	040	—	—
			CRHEATER330A00	19.2	14.4/17.6	49.2/60.2	040	040	—	—
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	040	040	—	—
		MED	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
			CRHEATER329A00	17.4	13.1/16.0	44.6/54.5	040	040	—	—
			CRHEATER330A00	19.2	14.4/17.6	49.2/60.2	040	040	—	—
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	040	040	—	—
		HIGH	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
			CRHEATER329A00	17.4	13.1/16.0	44.6/54.5	040	040	—	—
			CRHEATER330A00	19.2	14.4/17.6	49.2/60.2	040	040	—	—
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	040	040	—	—
	208/230-3-60	STD	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	—	—	—	—
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	037	038
			CRHEATER330A00	19.2	14.4/17.6	49.2/60.2	038	038	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
		MED	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	—	—	—	—
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	038	038
			CRHEATER330A00	19.2	14.4/17.6	49.2/60.2	038	038	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
		HIGH	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	—	—	—	—
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	038	038
			CRHEATER330A00	19.2	14.4/17.6	49.2/60.2	038	038	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
	460-3-60	STD	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
		MED	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
		HIGH	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
	575-3-60	STD	CRHEATER339A00	10.0	9.2	31.3	—	—	—	—
			CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
		MED	CRHEATER339A00	10.0	9.2	31.3	—	—	—	—
			CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
		HIGH	CRHEATER339A00	10.0	9.2	31.3	—	—	—	—
			CRHEATER340A00	15.0	13.8	47.0	—	—	—	—

Electrical data (cont)

50FC**05 ELECTRIC HEAT DATA — WITH NON-FUSED DISCONNECT

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION PART NUMBER CRSINGLEXXXA00			
							NO C.O. OR UNPOWERED C.O.		w/PWRD C.O.	
							NO P.E.	w/P.E. (pwrd fr/unit)	NO P.E	w/P.E. (pwrd fr/unit)
**05	208/230-1-60	STD	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	037	037	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
			CRHEATER329A00	17.4	13.1/16.0	44.6/54.5	040	040	—	—
			CRHEATER330A00	19.2	14.4/17.6	49.2/60.2	040	040	—	—
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	040	040	—	—
		MED	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	037	037	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
			CRHEATER329A00	17.4	13.1/16.0	44.6/54.5	040	040	—	—
			CRHEATER330A00	19.2	14.4/17.6	49.2/60.2	040	040	—	—
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	040	040	—	—
		HIGH	CRHEATER323A00	4.4	3.3/4.0	11.3/13.8	037	037	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
			CRHEATER329A00	17.4	13.1/16.0	44.6/54.5	040	040	—	—
			CRHEATER330A00	19.2	14.4/17.6	49.2/60.2	040	040	—	—
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	040	040	—	—
	208/230-3-60	STD	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	037	037
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	037	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	037	038
			CRHEATER330A00	19.2	14.4/17.6	49.2/60.2	038	038	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
		MED	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	037	037
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	037	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	038	038
			CRHEATER330A00	19.2	14.4/17.6	49.2/60.2	038	038	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
		HIGH	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	037	037
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	037	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	038	038
			CRHEATER330A00	19.2	14.4/17.6	49.2/60.2	038	038	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
	460-3-60	STD	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
		MED	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
		HIGH	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
	575-3-60	STD	CRHEATER339A00	10.0	9.2	31.3	—	—	—	—
			CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
		MED	CRHEATER339A00	10.0	9.2	31.3	—	—	—	—
			CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
		HIGH	CRHEATER339A00	10.0	9.2	31.3	—	—	—	—
			CRHEATER340A00	15.0	13.8	47.0	—	—	—	—

50FC**06 ELECTRIC HEAT DATA — WITHOUT NON-FUSED DISCONNECT

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION PART NUMBER CRSINGLEXXXA00			
							NO C.O. OR UNPOWERED C.O.		w/PWRD C.O.	
							NO P.E.	w/P.E. (pwrd fr/unit)	NO P.E	w/P.E. (pwrd fr/unit)
**06	208/230-1-60	STD	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
			CRHEATER329A00	17.4	13.1/16.0	44.6/54.5	040	040	—	—
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	040	040	—	—
		MED	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
			CRHEATER329A00	17.4	13.1/16.0	44.6/54.5	040	040	—	—
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	040	040	—	—
	208/230-3-60	STD	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	—	—	—	—
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
			CRHEATER332A00	24.5	18.4/22.5	62.8/76.8	038	038	038	038
		MED	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	—	—	—	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	038	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
			CRHEATER332A00	24.5	18.4/22.5	62.8/76.8	038	038	038	038
		HIGH	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	—	—	—	—
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
			CRHEATER332A00	24.5	18.4/22.5	62.8/76.8	038	038	038	038
	460-3-60	STD	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
			CRHEATER338A00	24.0	22.0	75.2	037	037	037	037
		MED	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
			CRHEATER338A00	24.0	22.0	75.2	037	037	037	037
		HIGH	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
			CRHEATER338A00	24.0	22.0	75.2	037	037	037	037
	575-3-60	STD	CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
			CRHEATER341A00	25.0	23.0	78.3	037	037	037	037
		MED	CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
			CRHEATER341A00	25.0	23.0	78.3	037	037	037	037
		HIGH	CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
			CRHEATER341A00	25.0	23.0	78.3	037	037	037	037

Electrical data (cont)

50FC**06 ELECTRIC HEAT DATA — WITH NON-FUSED DISCONNECT

50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION PART NUMBER CRSINGLEXXXA00			
							NO C.O. OR UNPOWERED C.O.		w/PWRD C.O.	
							NO P.E.	w/P.E. (pwrd fr/unit)	NO P.E	w/P.E. (pwrd fr/unit)
**06	208/230-1-60	STD	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
			CRHEATER329A00	17.4	13.1/16.0	44.6/54.5	040	040	—	—
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	040	040	—	—
		MED	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	—	—
			CRHEATER325A00	8.7	6.5/8.0	22.3/27.3	037	037	—	—
			CRHEATER327A00	13.0	9.8/11.9	33.3/40.7	040	040	—	—
			CRHEATER329A00	17.4	13.1/16.0	44.6/54.5	040	040	—	—
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	040	040	—	—
	208/230-3-60	STD	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	037	037
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	037	037	037	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
			CRHEATER332A00	24.5	18.4/22.5	62.8/76.8	038	038	038	038
		MED	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	037	037
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	037	037	037	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	038	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
			CRHEATER332A00	24.5	18.4/22.5	62.8/76.8	038	038	038	038
		HIGH	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	037	037
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	037	037	037	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
			CRHEATER332A00	24.5	18.4/22.5	62.8/76.8	038	038	038	038
	460-3-60	STD	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
			CRHEATER338A00	24.0	22.0	75.2	037	037	037	037
		MED	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
			CRHEATER338A00	24.0	22.0	75.2	037	037	037	037
		HIGH	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
			CRHEATER338A00	24.0	22.0	75.2	037	037	037	037
	575-3-60	STD	CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
			CRHEATER341A00	25.0	23.0	78.3	037	037	037	037
		MED	CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
			CRHEATER341A00	25.0	23.0	78.3	037	037	037	037
		HIGH	CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
			CRHEATER341A00	25.0	23.0	78.3	037	037	037	037

50FC**07 ELECTRIC HEAT DATA — WITHOUT NON-FUSED DISCONNECT

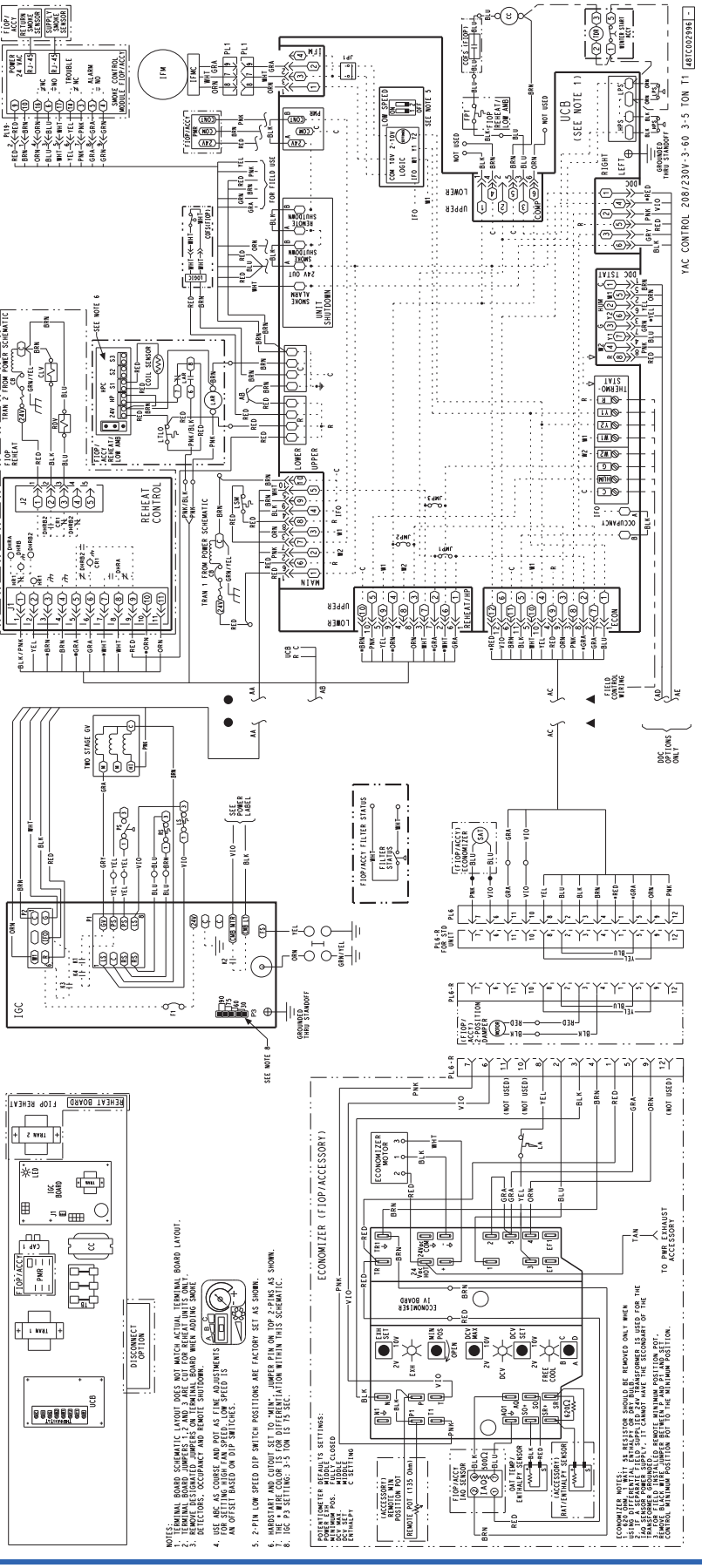
50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION PART NUMBER CRSINGLEXXXA00			
							NO C.O. OR UNPOWERED C.O.		w/PWRD C.O.	
							NO P.E.	w/P.E. (pwrd fr/unit)	NO P.E	w/P.E. (pwrd fr/unit)
**07	208/230-3-60	STD	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	—	—	—	—
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	038	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
			CRHEATER332A00	24.5	18.4/22.5	62.8/76.8	038	038	038	038
		MED	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	—	—	—	—
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	037	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
			CRHEATER332A00	24.5	18.4/22.5	62.8/76.8	038	038	038	038
		HIGH	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	—	—	—	—
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	—	—	—	—
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
			CRHEATER332A00	24.5	18.4/22.5	62.8/76.8	038	038	038	038
	460-3-60	STD	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
			CRHEATER338A00	24.0	22.0	75.2	037	037	037	037
		MED	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
			CRHEATER338A00	24.0	22.0	75.2	037	037	037	037
		HIGH	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
			CRHEATER338A00	24.0	22.0	75.2	037	037	037	037
	575-3-60	STD	CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
			CRHEATER341A00	25.0	23.0	78.3	037	037	037	037
		MED	CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
			CRHEATER341A00	25.0	23.0	78.3	037	037	037	037
		HIGH	CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
			CRHEATER341A00	25.0	23.0	78.3	037	037	037	037

Electrical data (cont)

50FC**07 ELECTRIC HEAT DATA — WITH NON-FUSED DISCONNECT

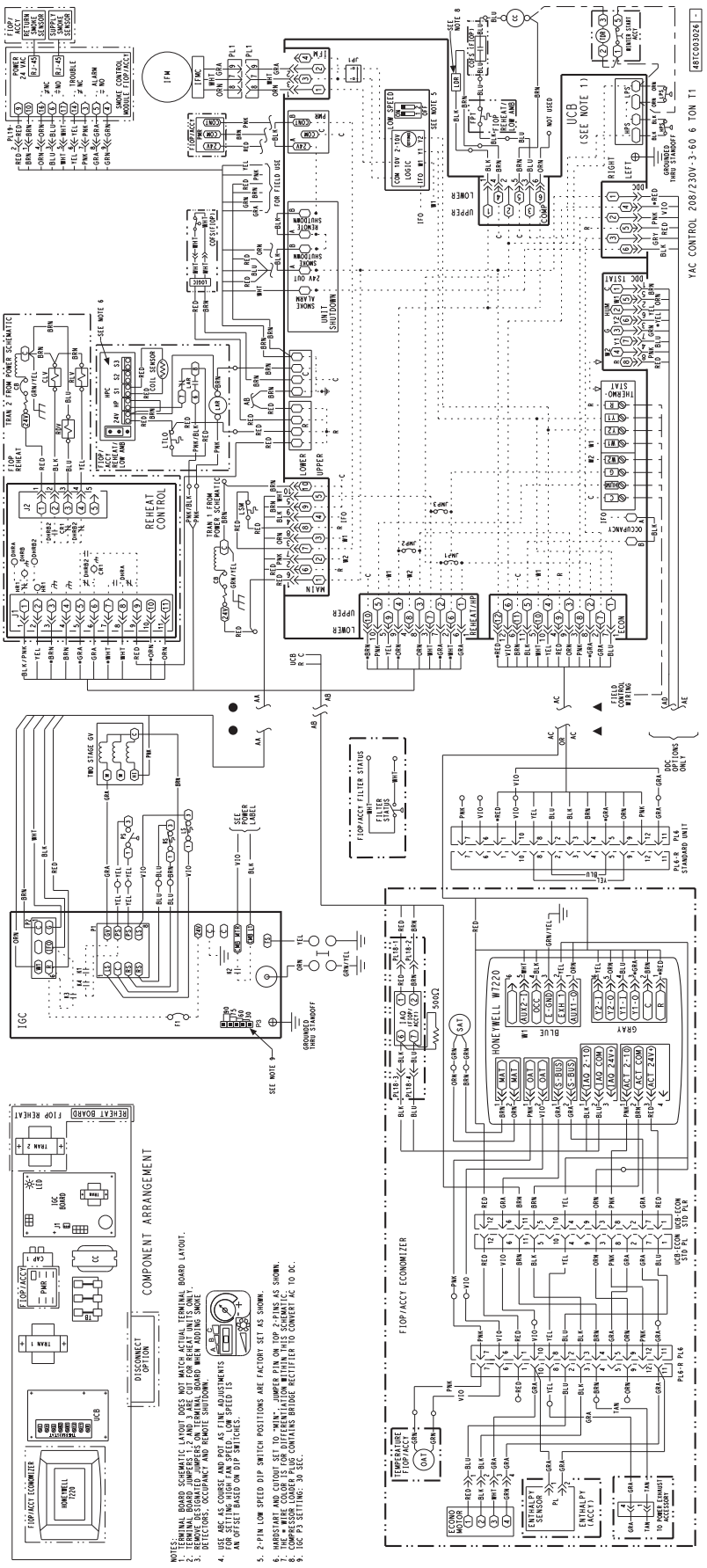
50FC UNIT SIZE	NOM. V-Ph-Hz	IFM TYPE	ELECTRIC HEATER PART NUMBER	NOM (kW)	APPLICATION (kW)	APPLICATION OUTPUT (MBH)	SINGLE POINT OR JUNCTION PART NUMBER CRSINGLEXXXA00			
							NO C.O. OR UNPOWERED C.O.		w/PWRD C.O.	
							NO P.E.	w/P.E. (pwrd fr/unit)	NO P.E	w/P.E. (pwrd fr/unit)
**07	208/230-3-60	STD	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	037	037
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	037	037	037	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	038	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
			CRHEATER332A00	24.5	18.4/22.5	62.8/76.8	038	038	038	038
		MED	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	037	037
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	037	037	037	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	037	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
			CRHEATER332A00	24.5	18.4/22.5	62.8/76.8	038	038	038	038
		HIGH	CRHEATER324A00	6.5	4.9/6.0	16.7/20.4	037	037	037	037
			CRHEATER326A00	10.5	7.9/9.6	26.9/32.9	037	037	037	037
			CRHEATER328A00	16.0	12.0/14.7	41.0/50.1	037	037	038	038
			CRHEATER331A00	21.0	15.8/19.3	53.8/65.8	038	038	038	038
			CRHEATER332A00	24.5	18.4/22.5	62.8/76.8	038	038	038	038
	460-3-60	STD	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
			CRHEATER338A00	24.0	22.0	75.2	037	037	037	037
		MED	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
			CRHEATER338A00	24.0	22.0	75.2	037	037	037	037
		HIGH	CRHEATER333A00	6.0	5.5	18.8	—	—	—	—
			CRHEATER335A00	11.5	10.6	36.0	—	—	—	—
			CRHEATER336A00	14.0	12.9	43.9	—	—	—	—
			CRHEATER337A00	21.5	19.7	67.4	037	037	037	037
			CRHEATER338A00	24.0	22.0	75.2	037	037	037	037
	575-3-60	STD	CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
			CRHEATER341A00	25.0	23.0	78.3	037	037	037	037
		MED	CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
			CRHEATER341A00	25.0	23.0	78.3	037	037	037	037
		HIGH	CRHEATER340A00	15.0	13.8	47.0	—	—	—	—
			CRHEATER341A00	25.0	23.0	78.3	037	037	037	037

TYPICAL CONTROL WIRING DIAGRAM — 48FC 04-06 208-230/3/60 UNIT
WITH ELECTRO-MECHANICAL CONTROL AND W7212 ECONOMIZER

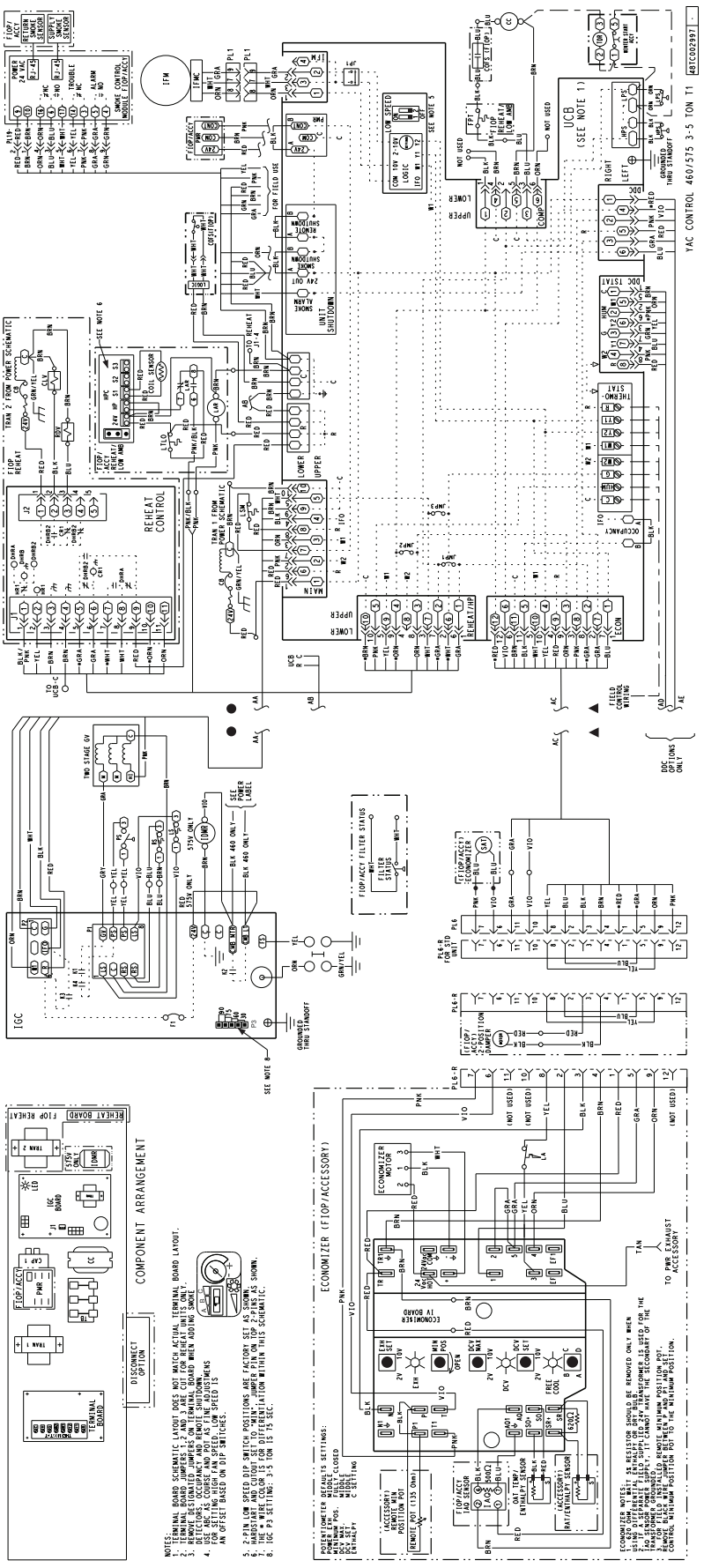


Typical wiring diagrams (cont)

TYPICAL CONTROL WIRING DIAGRAM — 48FC 07 208-230/3/60 UNIT WITH ELECTRO-MECHANICAL CONTROL AND W7220 ECONOMIZER

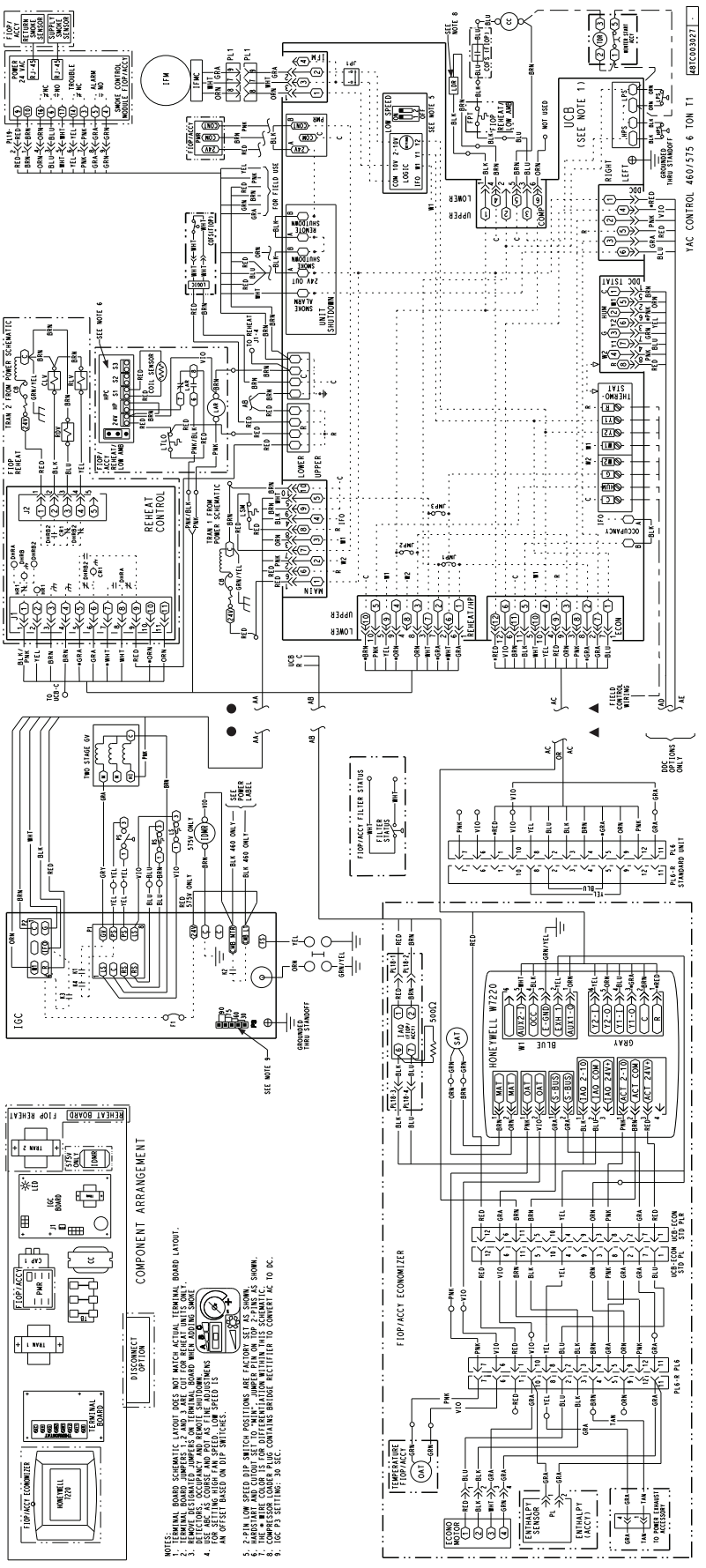


TYPICAL CONTROL WIRING DIAGRAM — 48FC 04-06 460-575/3/60 UNIT WITH ELECTRO-MECHANICAL CONTROL AND W7212 ECONOMIZER

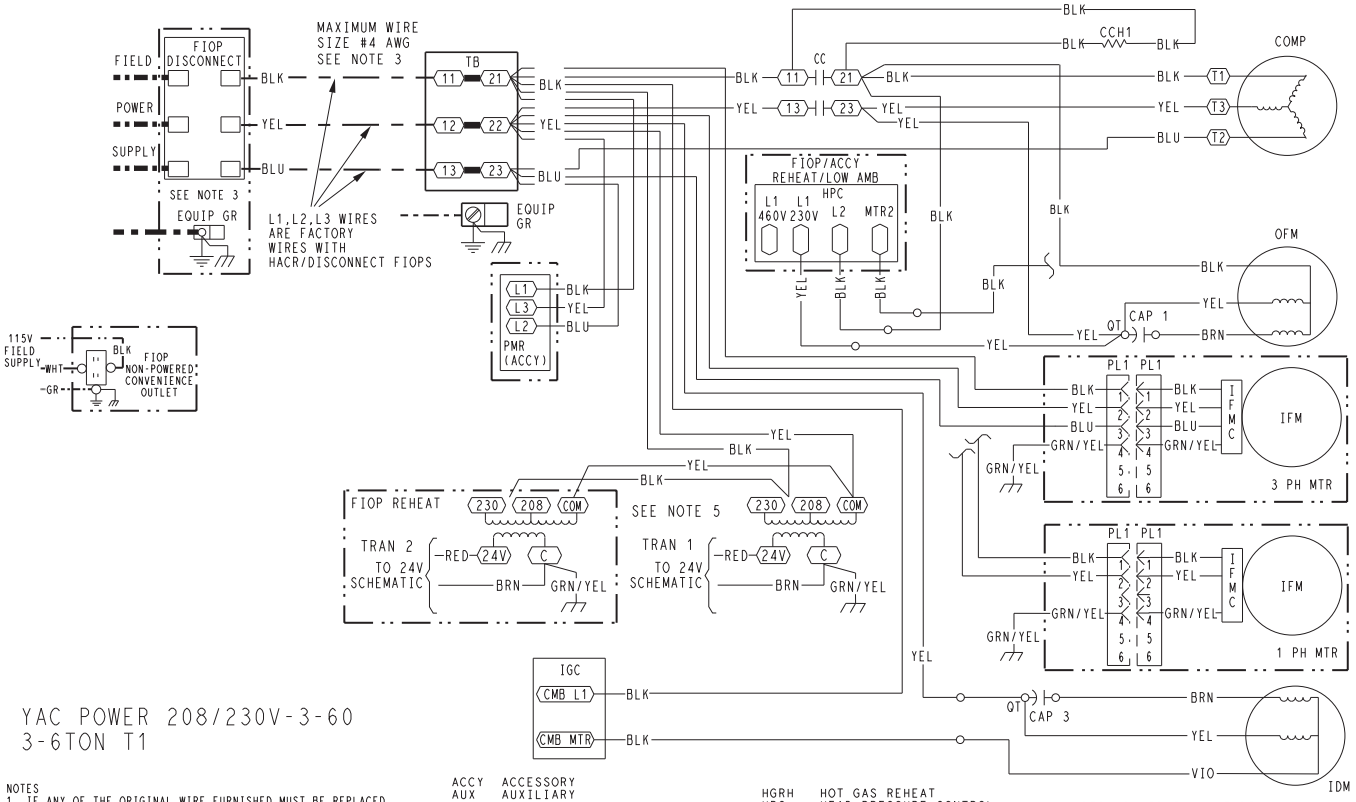


Typical wiring diagrams (cont)

TYPICAL CONTROL WIRING DIAGRAM — 48FC 07 460-575/3/60 UNIT WITH ELECTRO-MECHANICAL CONTROL AND W7220 ECONOMIZER



TYPICAL 48FC 04-07 POWER WIRING DIAGRAM, 208-230/3/60 UNIT SHOWN



NOTES
1. IF ANY OF THE ORIGINAL WIRE FURNISHED MUST BE REPLACED, IT MUST BE REPLACED WITH TYPE 90° C WIRE OR ITS EQUIVALENT.
2. COMPRESSOR AND FAN MOTORS ARE THERMALLY PROTECTED.
3. USE COPPER CONDUCTOR ONLY.
4. DO NOT DISCONNECT POWER PLUG OR SIGNAL WIRE WHILE UNDER LOAD.
5. ON 208/230V UNITS, TRAN IS WIRED FOR 230V. IF UNIT IS TO BE RUN WITH 208V POWER SUPPLY, DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 208V TAP.

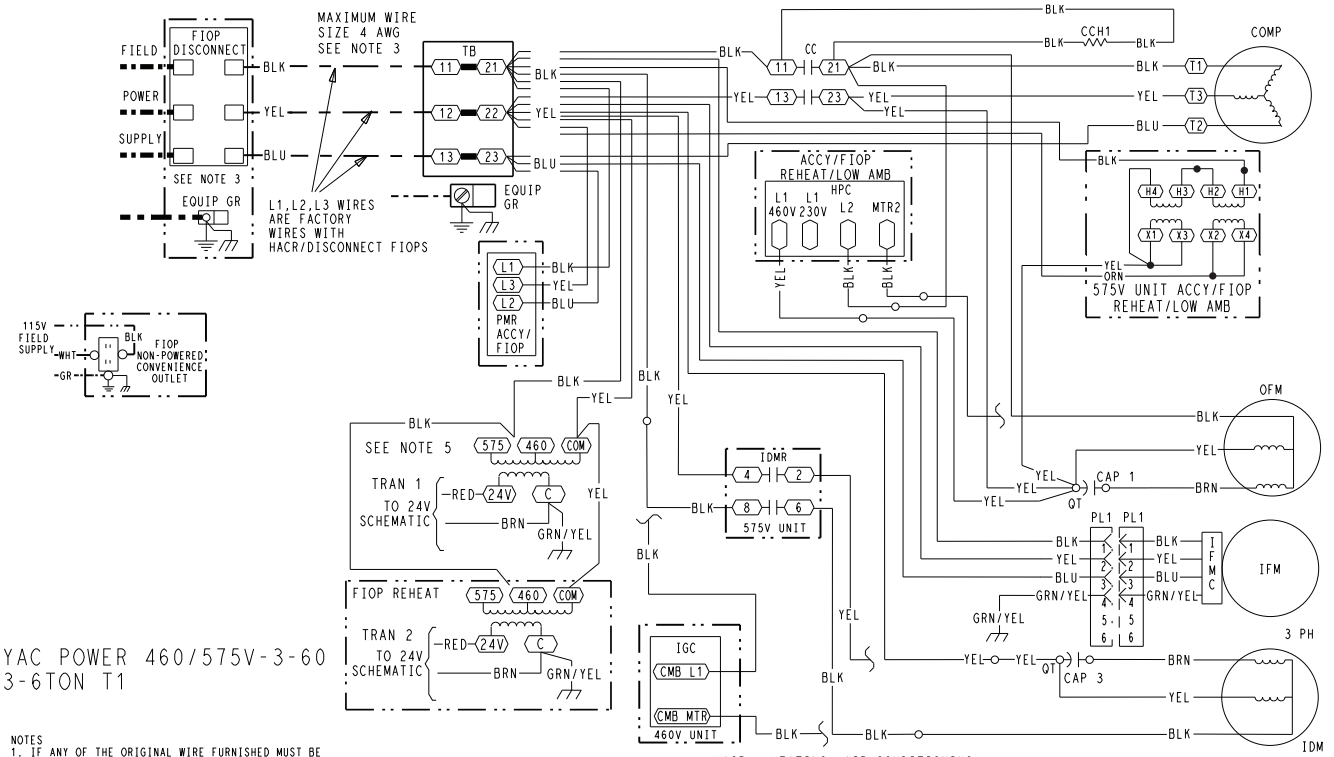
LEGEND

- MARKED WIRE
- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- TERMINAL BLOCK
- SPLICE
- SPLICE (MARKED)
- FACTORY WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- CIRCUIT BOARD TRACE
- ACCESSORY OR OPTIONAL WIRING

ACCY	ACCESSORY
AUX	AUXILIARY
AWG	AMERICAN WIRE GAGE
BA	BUILDING AUTOMATION NETWORK
CC	CONTACTOR,COMPRESSOR
C	COMMON
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CCH	CRANKCASE HEATER
CCHR	CRANKCASE HEATER RELAY
CCHTS	CRANKCASE HEATER TEMP SWITCH
CLO	COMPRESSOR LOCKOUT
CLV	COOLING LIQUID VALVE
CMB	CENTRIFUGAL MOTOR BLOWER
COFS	CONDENSATE OVERFLOW SWITCH
COM	SIGNAL COMMON
COMP	COMPRESSOR MOTOR
DDC	DIRECT DIGITAL CONTROL
DFB	DEFROST BOARD
DFT	DEFROST THERMOSTAT
EHR	ELECTRIC HEAT RELAY
ENTH	ENTHALPY
EQUIP	EQUIPMENT
ERV	ENERGY RECOVERY VENTILATOR
ESL	ENTHALPY SENSOR - LOW
FB	FUSE BLOCK
FIOP	FACTORY INSTALLED OPTION
FPT	FREEZE PROTECTION THERMOSTAT
FS	FLAME SWITCH
FST	FAN HOUSING TEMP SENSOR
FU	FUSE
G	THERMOSTAT FAN CALL
GR(GND)	GROUND
GV	GAS VALVE
HACR	HEATING, AIR-CONDITIONING, REFRIGERATION BREAKER
HGRH	HOT GAS REHEAT
HPC	HEAD PRESSURE CONTROL
HPS	HIGH PRESSURE SWITCH
HR	HEATER RELAY
HUM	HUMIDISTAT
IAQ	INDOOR AIR QUALITY SENSORS
IDM	INDUCED DRAFT MOTOR
IDMR	INDUCED DRAFT RELAY
IFM	INDOOR FAN MOTOR
IFMC	INDOOR FAN MOTOR CONTROL
IFO	INDOOR FAN ON SIGNAL
IGC	INTEGRATED GAS CONTROL
I	IGNITOR
IRH	INDOOR RELATIVE HUMIDITY
JMP	JUMPER
L1	LINE 1
LA	LOW AMBIENT LOCKOUT
LAR	LOW AMBIENT RELAY
LAS	LOW AMBIENT SWITCH
LDR	COMPRESSOR LOADER
LEN	LOCAL EQUIPMENT NETWORK
LOC	LOSS OF CHARGE
LOOP PWR	CURRENT LOOP POWER
LPS	LOW PRESSURE SWITCH
LS	LIMIT SWITCH
LSM	LIMIT SWITCH (MANUAL RESET)
LTLO	LOW TEMP LOCKOUT
MBB	MAIN BASE BOARD
MOV	METAL OXIDE VARISTOR
MTR	MOTOR
OAQ	OUTDOOR AIR QUALITY
OAT	OUTDOOR AIR TEMP. SEN
OFM	OUTDOOR FAN MOTOR
OFR	OUTDOOR FAN RELAY
OL	OVERLOAD
PER	POWER EXHAUST RELAY
PH	PHASE
PL	PLUG ASSEMBLY
POT	POTENTIOMETER
PMR	PHASE MONITOR RELAY
PS	PRESSURE SWITCH
PWM	PULSE WIDTH MODULATION
QT	QUADRUPLE TERMINAL
R	THERMOSTAT POWER
RAT	RETURN AIR TEMP. SEN
RDV	REHEAT DISCHARGE VALVE
RH	RELATIVE HUMIDITY
RLV	REHEAT LIQUID VALVE
RNET	LOCAL ACCESS NETWORK
RS	ROLLOUT SWITCH
RVS	REVERSING VALVE SOLENOID
SAT	SUPPLY AIR TEMP SENSOR
SDP	SYSTEM DISCHARGE PRESSURE
SPRH	SPACE RELATIVE HUMIDITY
SPT	SPACE TEMPERATURE SENSOR
SPTO	SPACE TEMPERATURE OFFSET
SSP	SYSTEM SUCTION PRESSURE
STD	STANDARD
SW	SWITCH
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TRAN	TRANSFORMER
UCB	UNIT CONTROL BOARD
W1	1st STAGE OF HEATING CALL
W2	2nd STAGE OF HEATING CALL
Y1	1st STAGE OF COOLING CALL
Y2	2nd STAGE OF COOLING CALL

48TC002991 -

TYPICAL 48FC 04-07 POWER WIRING DIAGRAM, 460-575/3/60 UNIT SHOWN



NOTES
1. IF ANY OF THE ORIGINAL WIRE FURNISHED MUST BE REPLACED, IT MUST BE REPLACED WITH TYPE 90° C WIRE OR ITS EQUIVALENT.
2. COMPRESSOR AND FAN MOTORS ARE THERMALLY PROTECTED.
3. USE COPPER CONDUCTOR ONLY.
4. DO NOT DISCONNECT POWER PLUG OR SIGNAL WIRE WHILE UNDER LOAD.
5. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC.

LEGEND

- MARKED WIRE
- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- TERMINAL BLOCK
- SPLICE
- SPLICE (MARKED)
- FACTORY WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- CIRCUIT BOARD TRACE
- ACCESSORY OR OPTIONAL WIRING

ACCY	ACCESSORY
AUX	AUXILLARY
AWG	AMERICAN WIRE GAGE
BA	BUILDING AUTOMATION NETWORK
CC	CONTACTOR,COMPRESSOR
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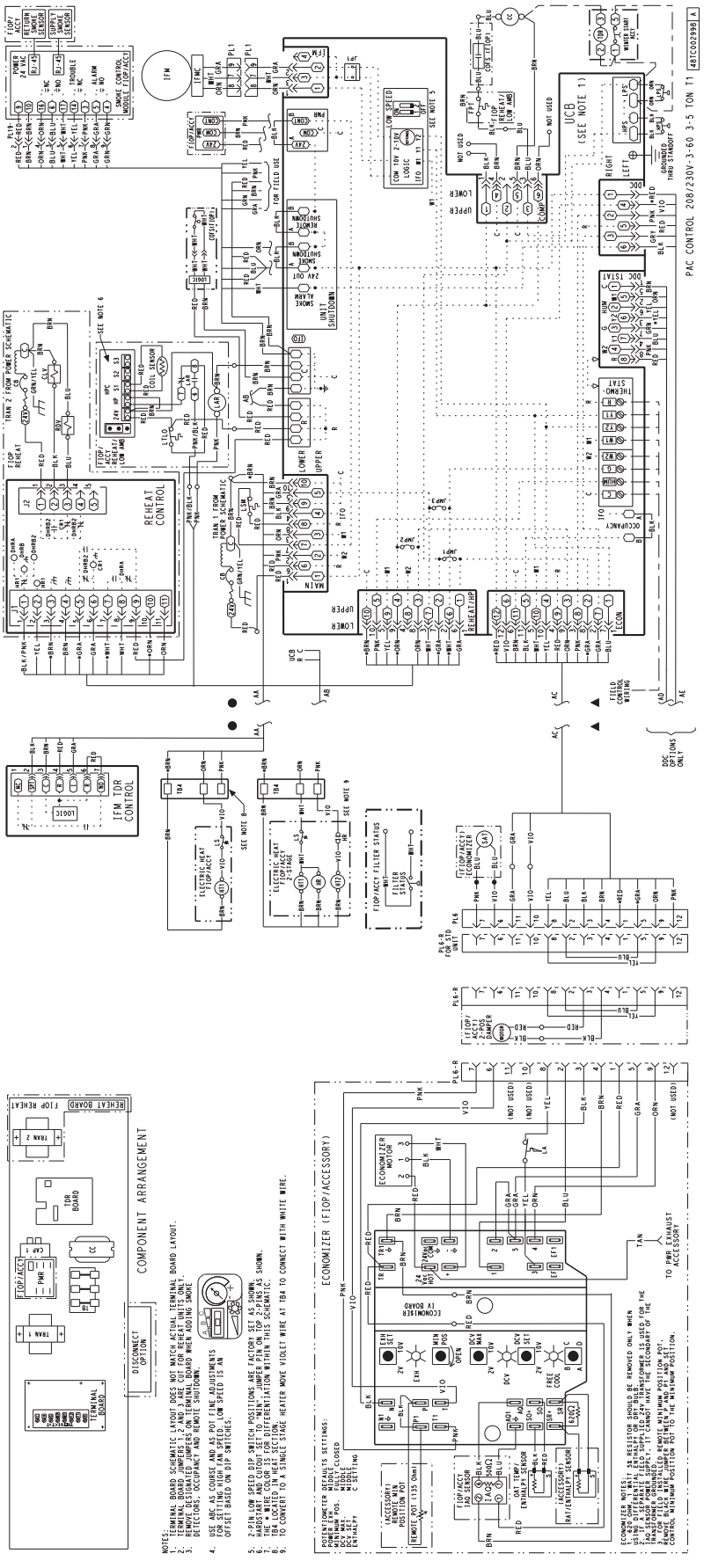
CCHR	CRANKCASE HEATER RELAY
CCHTS	CRANKCASE HEATER TEMP SWITCH
CLO	COMPRESSOR LOCKOUT
CLV	COOLING LIQUID VALVE
CMB	CENTRIFUGAL MOTOR BLOWER
COFS	CONDENSATE OVERFLOW SWITCH
COM	SIGNAL COMMON
COMP	COMPRESSOR MOTOR
DDC	DIRECT DIGITAL CONTROL
DFB	DEFROST BOARD
DFT	DEFROST THERMOSTAT
EHR	ELECTRIC HEAT RELAY
ENTH	ENTHALPY
EQUIP	EQUIPMENT
ERV	ENERGY RECOVERY VENTILATOR
ESL	ENTHALPY SENSOR - LOW
FB	FUSE BLOCK
FIOP	FACTORY INSTALLED OPTION
FPT	FREEZE PROTECTION THERMOSTAT
FS	FLAME SWITCH
FST	FAN HOUSING TEMP SENSOR
FU	FUSE
G	THERMOSTAT FAN CALL
GR(GND)	GROUND
GV	GAS VALVE

HACR	HEATING, AIR-CONDITIONING, REFRIGERATION BREAKER
HGRH	HOT GAS REHEAT
HPC	HEAD PRESSURE CONTROL
HPS	HIGH PRESSURE SWITCH
HR	HEATER RELAY
HUM	HUMIDISTAT
IAQ	INDOOR AIR QUALITY SENSORS
IDM	INDUCED DRAFT MOTOR
IDMR	INDUCED DRAFT RELAY
IFM	INDOOR FAN MOTOR
IFMC	INDOOR FAN MOTOR CONTROL
IFO	INDOOR FAN ON SIGNAL
IGC	INTEGRATED GAS CONTROL
I	IGNITOR
IRH	INDOOR RELATIVE HUMIDITY
JMP	JUMPER
L1	LINE 1
LA	LOW AMBIENT LOCKOUT
LAR	LOW AMBIENT RELAY
LAS	LOW AMBIENT SWITCH
LDR	COMPRESSOR LOADER
LEN	LOCAL EQUIPMENT NETWORK
LOC	LOSS OF CHARGE
LOOP PWR	CURRENT LOOP POWER
LPS	LOW PRESSURE SWITCH
LS	LIMIT SWITCH
LSM	LIMIT SWITCH (MANUAL RESET)
LTLO	LOW TEMP LOCKOUT
MBB	MAIN BASE BOARDMMR
MOV	METAL OXIDE VARISTOR
MTR	MOTOR
OAQ	OUTDOOR AIR QUALITY
OAT	OUTDOOR AIR TEMP. SEN
OFM	OUTDOOR FAN MOTOR
OFR	OUTDOOR FAN RELAY

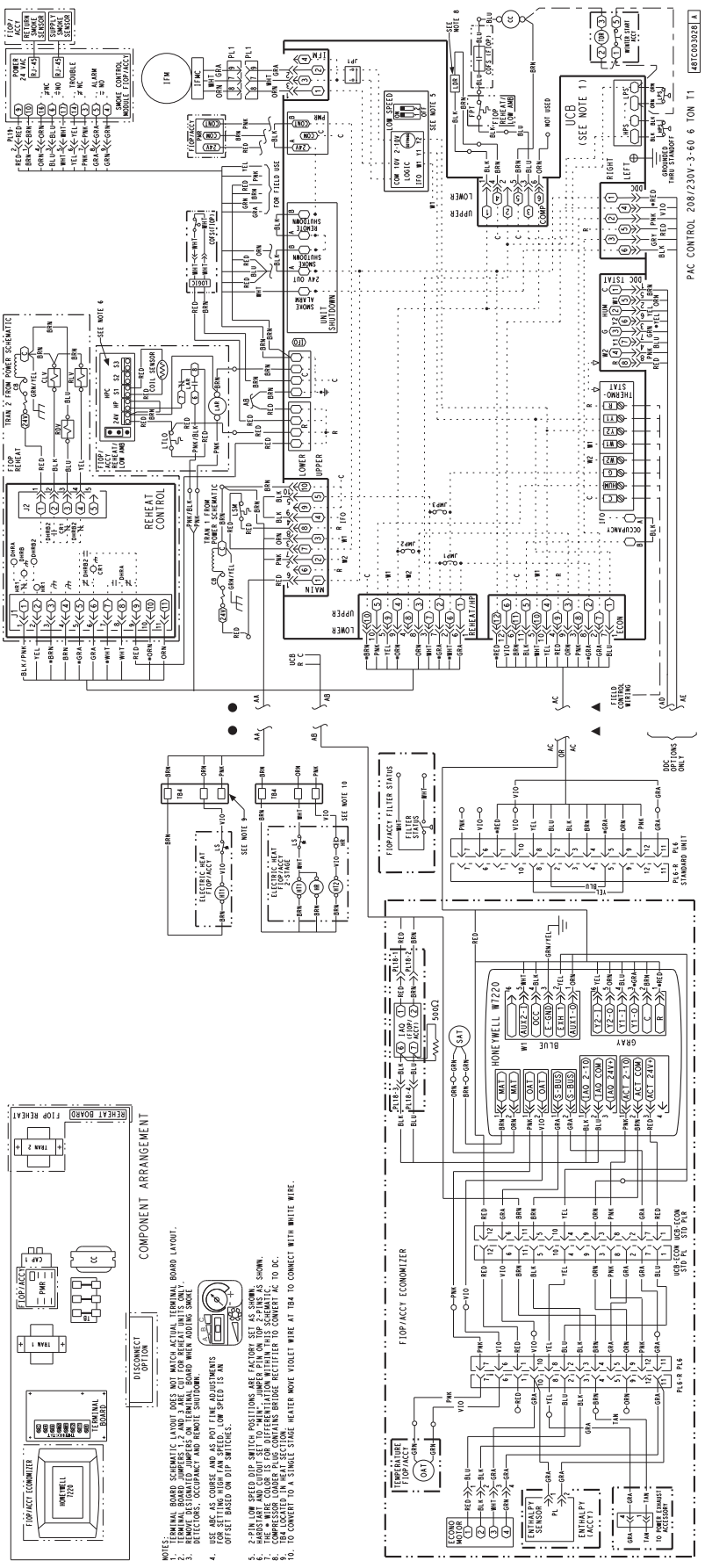
OL	OVERLOAD
PER	POWER EXHAUST RELAY
PH	PHASE
PL	PLUG ASSEMBLY
POT	POTENTIOMETER
PMR	PHASE MONITOR RELAY
PS	PRESSURE SWITCH
PWM	PULSE WIDTH MODULATION
QT	QUADRUPLE TERMINA
R	THERMOSTAT POWER
RAT	RETURN AIR TEMP. SEN
RDV	REHEAT DISCHARGE VALVE
RH	RELATIVE HUMIDITY
RLV	REHEAT LIQUID VALVE
RNET	LOCAL ACCESS NETWORK
RS	ROLLOUT SWITCH
RVS	REVERSING VALVE SOLENOID
SAT	SUPPLY AIR TEMP SENSOR
SDP	SYSTEM DISCHARGE PRESSURE
SPRH	SPACE RELATIVE HUMIDITY
SPT	SPACE TEMPERATURE SENSOR
SPTO	SPACE TEMPERATURE OFFSET
SSP	SYSTEM SUCTION PRESSURE
STD	STANDARD
SW	SWITCH
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TRAN	TRANSFORMER
UCB	UNIT CONTROL BOARD
W1	1st STAGE OF HEATING CALL
W2	2nd STAGE OF HEATING CALL
Y1	1st STAGE OF COOLING CALL
Y2	2nd STAGE OF COOLING CALL

48TC002992 -

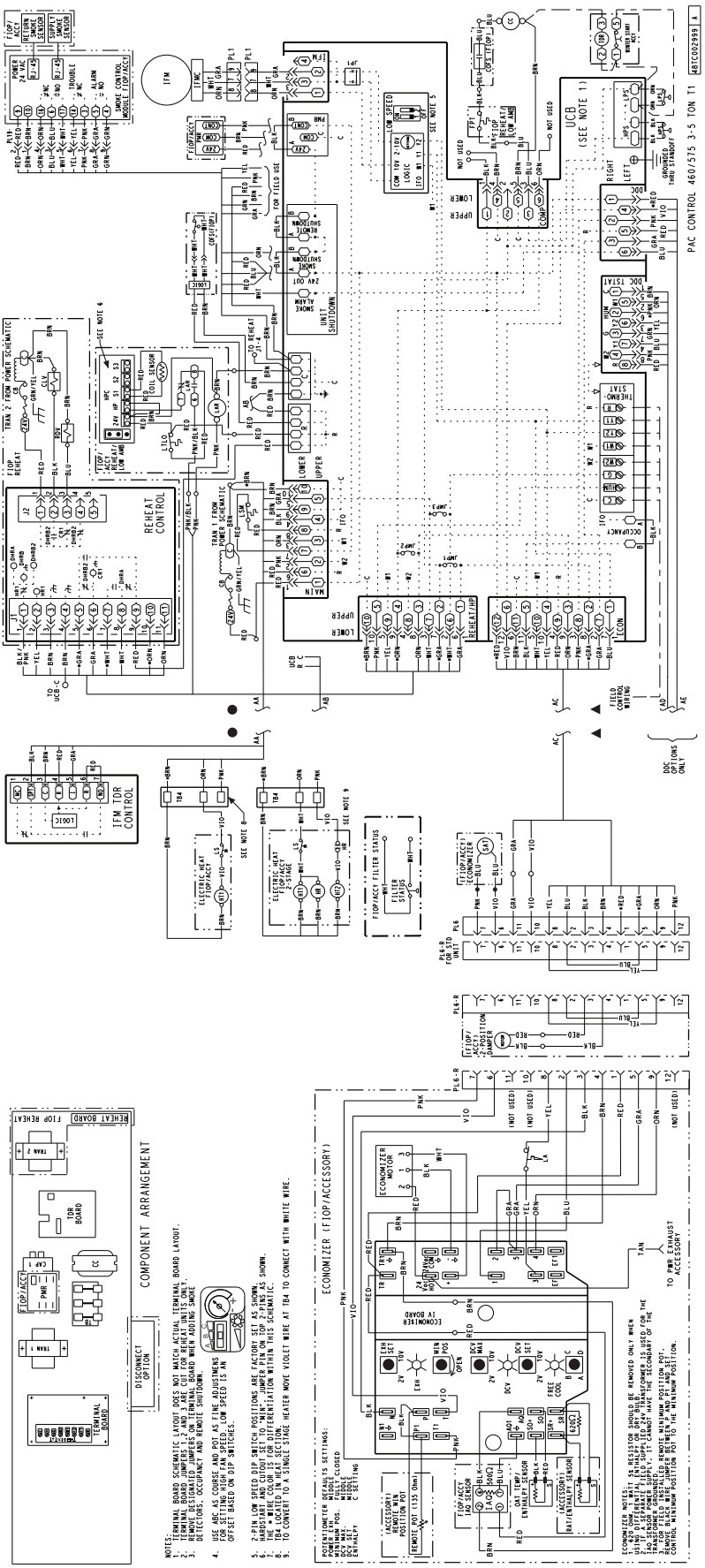
TYPICAL CONTROL WIRING DIAGRAM — 50FC 04-06 208-230/3/60 UNIT WITH ELECTRO-MECHANICAL CONTROL AND W7212 ECONOMIZER



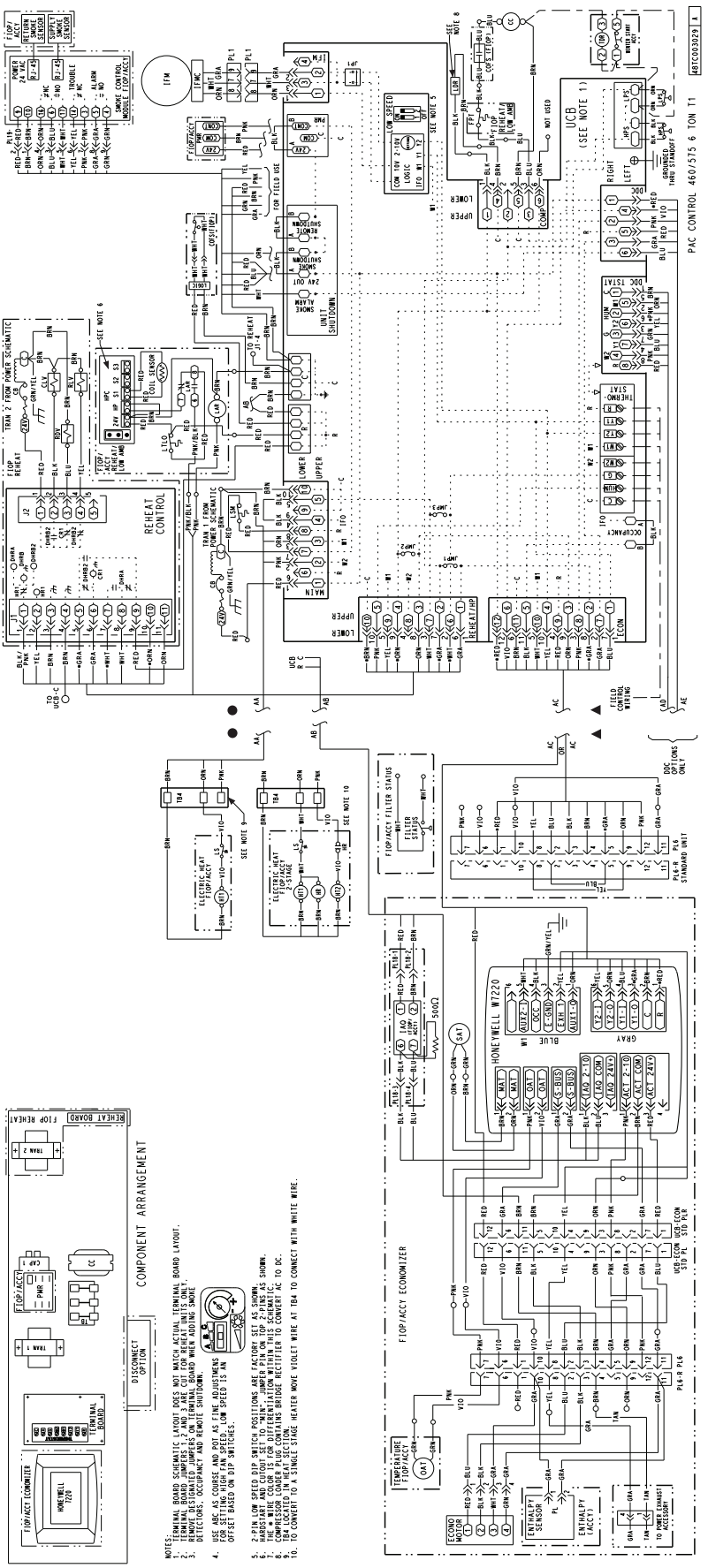
TYPICAL CONTROL WIRING DIAGRAM — 50FC 07 208-230/3/60 UNIT WITH ELECTRO-MECHANICAL CONTROL AND W7220 ECONOMIZER



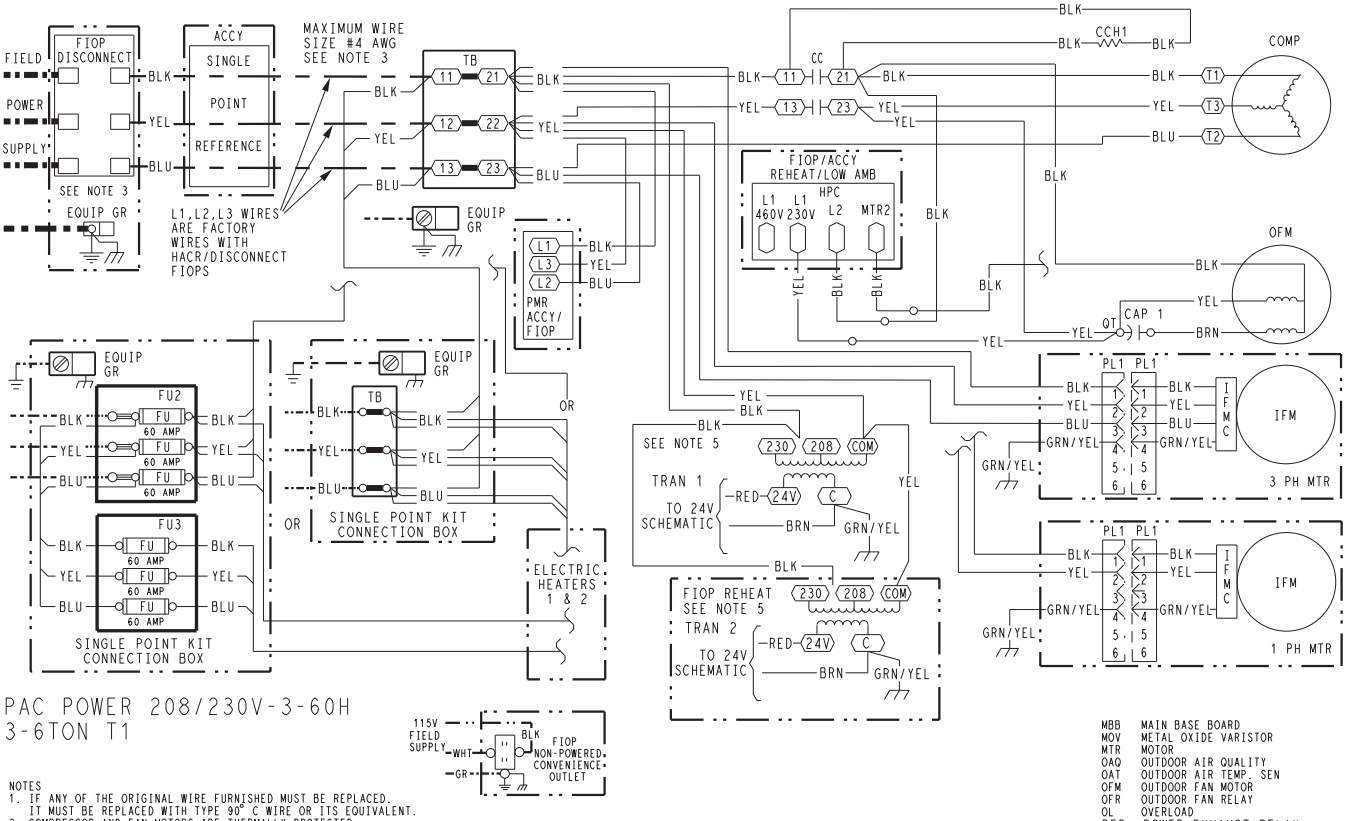
TYPICAL CONTROL WIRING DIAGRAM — 50FC 04-06 460-575/3/60 UNIT WITH ELECTRO-MECHANICAL CONTROL AND W7212 ECONOMIZER



TYPICAL CONTROL WIRING DIAGRAM — 50FC 07 460-575/3/60 UNIT
WITH ELECTRO-MECHANICAL CONTROL AND W7220 ECONOMIZER



TYPICAL 50FC 04-07 POWER WIRING DIAGRAM, 208-230/3/60 UNIT SHOWN



PAC POWER 208/230V-3-60H
3-6TON T1

NOTES
1. IF ANY OF THE ORIGINAL WIRE FURNISHED MUST BE REPLACED. IT MUST BE REPLACED WITH TYPE 90° C WIRE OR ITS EQUIVALENT.
2. COMPRESSOR AND FAN MOTORS ARE THERMALLY PROTECTED.
3. USE COPPER CONDUCTOR ONLY.
4. DO NOT DISCONNECT POWER PLUG OR SIGNAL WIRE WHILE UNDER LOAD.
5. ON 208/230V UNITS, TRAN IS WIRED FOR 230V. IF UNIT IS TO BE RUN WITH 208V POWER SUPPLY, DISCONNECT BLK WIRE FROM 230V TAP AND CONNECT TO 208V TAP.

LEGEND

- MARKED WIRE
- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- TERMINAL BLOCK
- SPLICE
- SPLICE (MARKED)
- FACTORY WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- CIRCUIT BOARD TRACE
- ACCESSORY OR OPTIONAL WIRING

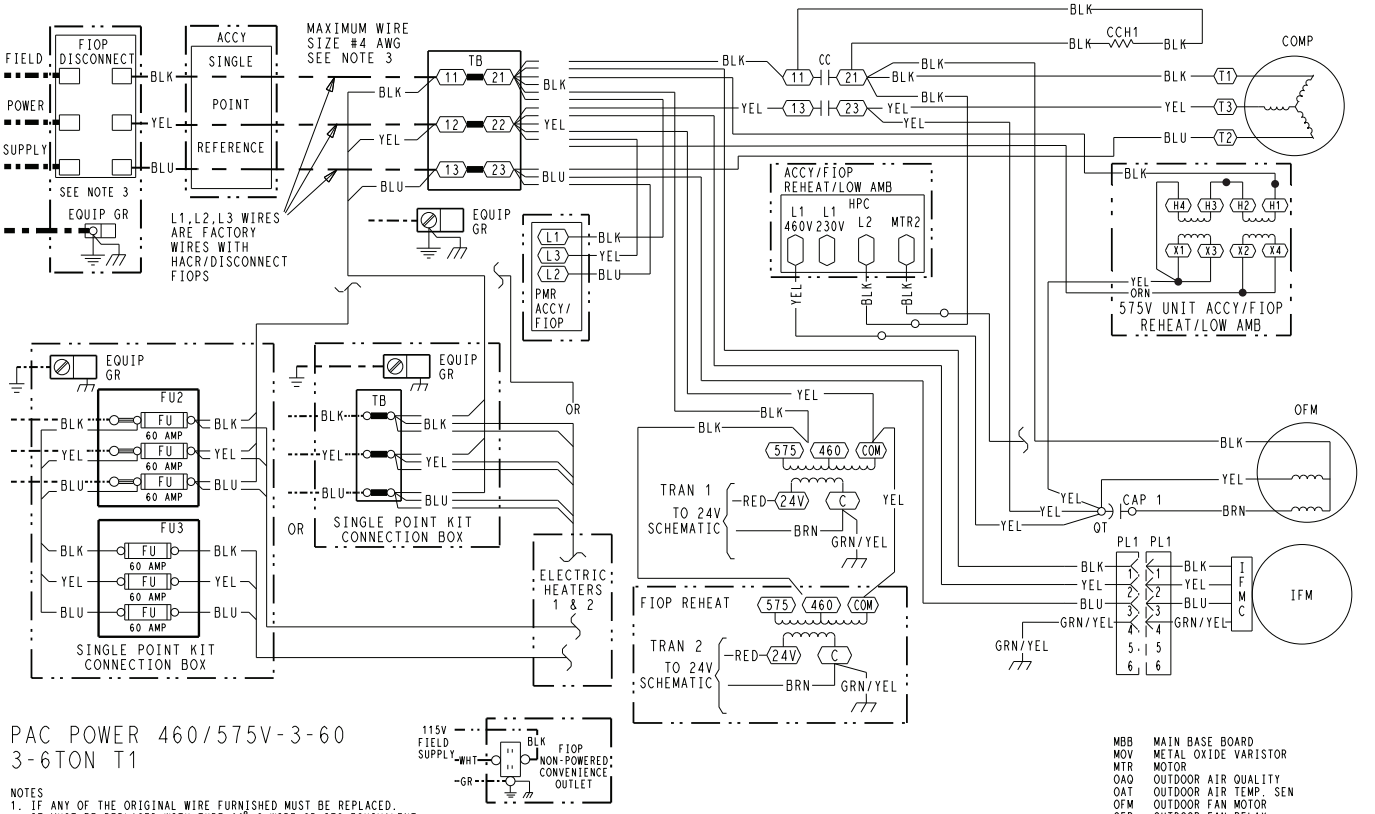
ACCY	ACCESSORY
AWG	AMERICAN WIRE GAGE
BAS	BUILDING AUTOMATION NETWORK
CC	CONTACTOR,COMPRESSOR
C	COMMON
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CCH	CRANKCASE HEATER
CCHR	CRANKCASE HEATER RELAY
CCHTS	CRANKCASE HEATER TEMP SWITCH
CLO	COMPRESSOR LOCKOUT
CLV	COOLING LIQUID VALVE
COFS	CONDENSATE OVERFLOW SWITCH
COM	SIGNAL COMMON
COMP	COMPRESSOR MOTOR
DDC	DIRECT DIGITAL CONTROL
DFB	DEFROST BOARD
DFT	DEFROST THERMOSTAT
EHR	ELECTRIC HEAT RELAY
ENTH	ENTHALPY
ERV	ENERGY RECOVERY VENTILATOR
ESL	ENTHALPY SENSOR - LOW
FB	FUSE BLOCK
FIOP	FACTORY INSTALLED OPTION
FPT	FREEZE PROTECTION THERMOSTAT
FST	FAN HOUSING TEMP SENSOR
FU	FUSE

G	THERMOSTAT FAN CALL
GR(GND)	GROUND
HACR	HEATING, AIR-CONDITIONING, REFRIGERATION BREAKER
HR	HEATER RELAY
HGRH	HOT GAS REHEAT
HPC	HEAD PRESSURE CONTROL
HPS	HIGH PRESSURE SWITCH
HUM	HUMIDISTAT
IAQ	INDOOR AIR QUALITY SENSORS
IFM	INDOOR FAN MOTOR
IFMC	INDOOR FAN MOTOR CONTROL
IFO	INDOOR FAN ON SIGNAL
IRH	INDOOR RELATIVE HUMIDITY
JMP	JUMPER
L1	LINE 1
LA	LOW AMBIENT LOCKOUT
LAR	LOW AMBIENT RELAY
LAS	LOW AMBIENT SWITCH
LDR	COMPRESSOR LOADER
LEN	LOCAL EQUIPMENT NETWORK
LOC	LOSS OF CHARGE
LOOP PWR	CURRENT LOOP POWER
LPS	LOW PRESSURE SWITCH
LS	LIMIT SWITCH
LSM	LIMIT SWITCH (MANUAL RESET)
LTLO	LOW TEMP LOCKOUT

MBB	MAIN BASE BOARD
MOV	METAL OXIDE VARISTOR
MTR	MOTOR
OAQ	OUTDOOR AIR QUALITY
OAT	OUTDOOR AIR TEMP. SEN
OFM	OUTDOOR FAN MOTOR
OFR	OUTDOOR FAN RELAY
OL	OVERLOAD
PER	POWER EXHAUST RELAY
PH	PHASE
PL	PLUG ASSEMBLY
POT	POTENTIOMETER
PMR	PHASE MONITOR RELAY
PS	PRESSURE SWITCH
PWM	PULSE WIDTH MODULATION
QT	QUADRUPLE TERMINAL
R	THERMOSTAT POWER
RAT	RETURN AIR TEMP. SEN
RDV	REHEAT DISCHARGE VALVE
RH	RELATIVE HUMIDITY
RLV	REHEAT LIQUID VALVE
RNET	LOCAL ACCESS NETWORK
RVS	REVERSING VALVE SOLENOID
SAT	SUPPLY AIR TEMP SENSOR
SDP	SYSTEM DISCHARGE PRESSURE
SPRH	SPACE RELATIVE HUMIDITY
SPT	SPACE TEMPERATURE SENSOR
SPTO	SPACE TEMPERATURE OFFSET
SSP	SYSTEM SUCTION PRESSURE
SW	SWITCH
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TRAN	TRANSFORMER
UCB	UNIT CONTROL BOARD
W1	1st STAGE OF HEATING CALL
W2	2nd STAGE OF HEATING CALL
Y1	1st STAGE OF COOLING CALL
Y2	2nd STAGE OF COOLING CALL

48TC002994 -

TYPICAL 50FC 04-07 POWER WIRING DIAGRAM, 460-575/3/60 UNIT SHOWN



PAC POWER 460/575V-3-60
3-6TON T1

NOTES
1. IF ANY OF THE ORIGINAL WIRE FURNISHED MUST BE REPLACED. IT MUST BE REPLACED WITH TYPE 90° C WIRE OR ITS EQUIVALENT.
2. COMPRESSOR AND FAN MOTORS ARE THERMALLY PROTECTED.
3. USE COPPER CONDUCTOR ONLY.
4. DO NOT DISCONNECT POWER PLUG OR SIGNAL WIRE WHILE UNDER LOAD.
5. TRANSFORMER IS DEDICATED BASED ON UNIT VOLTAGE. TAPS ONLY SHOWN TO SIMPLIFY SCHEMATIC.

LEGEND

- MARKED WIRE
- TERMINAL (MARKED)
- TERMINAL (UNMARKED)
- TERMINAL BLOCK
- SPLICE
- SPLICE (MARKED)
- FACTORY WIRING
- FIELD CONTROL WIRING
- FIELD POWER WIRING
- CIRCUIT BOARD TRACE
- ACCESSORY OR OPTIONAL WIRING

ACCY	ACCESSORY
AWG	AMERICAN WIRE GAGE
BAS	BUILDING AUTOMATION NETWORK
CC	CONTACTOR,COMPRESSOR
C	COMMON
CAP	CAPACITOR
CB	CIRCUIT BREAKER
CCH	CRANKCASE HEATER
CCHR	CRANKCASE HEATER RELAY
CCHTS	CRANKCASE HEATER TEMP SWITCH
CLO	COMPRESSOR LOCKOUT
CLV	COOLING LIQUID VALVE
COFS	CONDENSATE OVERFLOW SWITCH
COM	SIGNAL COMMON
COMP	COMPRESSOR MOTOR
DDC	DIRECT DIGITAL CONTROL
DFB	DEFROST BOARD
DFT	DEFROST THERMOSTAT
EHR	ELECTRIC HEAT RELAY
ENTH	ENTHALPY
ERV	ENERGY RECOVERY VENTILATOR
ESL	ENTHALPY SENSOR - LOW
FB	FUSE BLOCK
FIOP	FACTORY INSTALLED OPTION
FPT	FREEZE PROTECTION THERMOSTAT
FST	FAN HOUSING TEMP SENSOR
FU	FUSE
G	THERMOSTAT FAN CALL
GR(GND)	GROUND
HACR	HEATING, AIR-CONDITIONING, REFRIGERATION BREAKER
HR	HEATER RELAY
HGRH	HOT GAS REHEAT
HPC	HEAD PRESSURE CONTROL
HPS	HIGH PRESSURE SWITCH
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IAQ	INDOOR AIR QUALITY SENSORS
IFM	INDOOR FAN MOTOR
IFMC	INDOOR FAN MOTOR CONTROL
IFO	INDOOR FAN ON SIGNAL
IRH	INDOOR RELATIVE HUMIDITY
JMP	JUMPER
L1	LINE 1
LA	LOW AMBIENT LOCKOUT
LAR	LOW AMBIENT RELAY
LAS	LOW AMBIENT SWITCH
LDR	COMPRESSOR LOADER
LEN	LOCAL EQUIPMENT NETWORK
LOC	LOSS OF CHARGE
LOOP PWR	CURRENT LOOP POWER
LPS	LOW PRESSURE SWITCH
LS	LIMIT SWITCH
LSM	LIMIT SWITCH (MANUAL RESET)
LTLO	LOW TEMP LOCKOUT

MBB	MAIN BASE BOARD
MOV	METAL OXIDE VARISTOR
MTR	MOTOR
OAQ	OUTDOOR AIR QUALITY
OAT	OUTDOOR AIR TEMP. SEN
OFM	OUTDOOR FAN MOTOR
OFR	OUTDOOR FAN RELAY
OL	OVERLOAD
PER	POWER EXHAUST RELAY
PH	PHASE
PL	PLUG ASSEMBLY
POT	POTENTIOMETER
PMR	PHASE MONITOR RELAY
PS	PRESSURE SWITCH
PWM	PULSE WIDTH MODULATION
QT	QUADRUPLE TERMINAL
R	THERMOSTAT POWER
RAT	RETURN AIR TEMP. SEN
RDV	REHEAT DISCHARGE VALVE
RH	RELATIVE HUMIDITY
RLV	REHEAT LIQUID VALVE
RNET	LOCAL ACCESS NETWORK
RVS	REVERSING VALVE SOLENOID
SAT	SUPPLY AIR TEMP SENSOR
SDP	SYSTEM DISCHARGE PRESSURE
SPRH	SPACE RELATIVE HUMIDITY
SPT	SPACE TEMPERATURE SENSOR
SPTO	SPACE TEMPERATURE OFFSET
SSP	SYSTEM SUCTION PRESSURE
SW	SWITCH
TB	TERMINAL BLOCK
TDR	TIME DELAY RELAY
TRAN	TRANSFORMER
UCB	UNIT CONTROL BOARD
W1	1st STAGE OF HEATING CALL
W2	2nd STAGE OF HEATING CALL
Y1	1st STAGE OF COOLING CALL
Y2	2nd STAGE OF COOLING CALL

48TC002995 | -

Sequence of operation

General

The sequence below describes the sequence of operation for an electro-mechanical unit with and without a factory-installed EconoMi$er® IV (W7212 controller) and X (W7220 controller). For information regarding a direct digital controller, see the start-up, operations, and troubleshooting manual for the applicable controller.

Electro-Mechanical Units with No Economizer

Cooling (single stage units)

When the thermostat calls for cooling, terminals G and Y1 are energized. The indoor fan will run at the user set fan speed and the compressor contactor (CC) is energized causing the compressor and outdoor fan to run.

When the thermostat removes the call for Y1, the compressor contactor will de-energize shutting down the compressor and the outdoor fan. When the thermostat removes the call for G, the indoor fan will turn off after the specific unit fan off delay.

Cooling (two stage units)

When the thermostat calls for cooling, terminals G and Y1 are energized. The indoor fan will run at the low fan speed and the compressor contactor (CC) is energized causing the compressor and outdoor fan to run. The low indoor fan speed is 66% of the user set fan speed and the compressor will run at partial capacity.

If additional cooling is needed, the thermostat will add the call for Y2. This will increase the indoor fan speed to the user set fan speed and energize the compressor loader for full compressor capacity. The outdoor fan is the same speed for Y1 and Y2.

When the thermostat removes the call for Y2 but leaves the Y1, the indoor fan will reduce speed to 66% of the user set fan speed, the compressor loader will turn off, and the outdoor fan will remain on. When the thermostat removes the call for Y1 the compressor contactor will de-energize shutting down the compressor and the outdoor fan. When the thermostat removes the call for G, the indoor fan will turn off after the specific unit fan off delay.

NOTE: Per ASHRAE 90.1-2016 and IECC-2018 standards, during the first stage of cooling operation the Unit Control Board (UCB) will adjust the fan motor speed to provide 66% of the total cfm established for the unit.

Gas Heating (48FC units)

NOTE: WeatherMaker® units have either 1 or 2 stages of gas heat.

When the thermostat calls for heating, power is sent to W on the Integrated Gas Controller (IGC) board. An LED (light-emitting diode) on the IGC board turns on and remains on during normal operation. A check is made to ensure that the roll-out switch and limit switch are closed. If the check was successful, the induced-draft motor is energized, and when its speed is satisfactory, as proven by the flue gas pressure switch, the ignition activation period begins. The burners will ignite within 5 seconds. If the burners do not light, there is a 22 second delay before another 5 second attempt. This sequence is repeated for 15 minutes or until the burners light. If, after the 15 minutes, the burners still have not lit, heating is locked out. To reset the control, break 24 V power to the thermostat.

When ignition occurs, the IGC board will continue to monitor the condition of the roll-out switch, the limit switches, the flue gas pressure switch, as well as the flame sensor. 45 seconds after ignition occurs, assuming the unit is controlled through a room thermostat set for fan auto, the indoor-fan motor will energize (and the outdoor-air dampers will open to their minimum position). If, for some reason, the over-temperature limit opens prior to the start of the indoor fan blower, the unit will shorten the 45 second delay to 5 seconds less than the time from initiation of heat to when the limit tripped. Gas will not be interrupted to the burners and heating will continue. Once the fan-on delay has been modified, it will not change back to 45 seconds until power is reset to the control. On units with 2 stages of heat, when additional heat is required, W2 closes and initiates power to the second stage of the main gas valve. When the thermostat is satisfied, W1 and W2 open and the gas valve closes, interrupting the flow of gas to the main burners. If the unit is controlled through a room thermostat set for fan auto, the indoor-fan motor will continue to operate for an additional 45 seconds then stop. A LED indicator is provided on the IGC to monitor operation.

Electric Heating (50FC units)

NOTE: 50FC units are sold as cooling only. If electric heaters are required, use only factory-approved heaters. They will operate as follows.

Units have either 1 or 2 stages of electric heat. When the thermostat calls for heating, power is applied to G and the W1 terminals at the unit. The unit control will energize the indoor fan contactor and the first stage of electric heat. On units with two-stage heating, when additional heating is required, the second stage of electric heat (if equipped) will be energized when power is applied at the W2 terminal on the unit.

IMPORTANT: The thermostat must be configured for Electric Heat so it will energize G with the W1 call.

Electro-mechanical Units with Factory-Installed EconoMi$er

When free cooling is not available, the compressors will be controlled by the zone thermostat. When free cooling is available, the outdoor-air damper is modulated by the EconoMi$er IV and X control to provide a 50°F (10°C) to 55°F (13°C) mixed-air temperature into the zone. As the mixed air temperature fluctuates above 55°F (13°C) or below 50°F (10°C) dampers will be modulated (open or close) to bring the mixed-air temperature back within control. If mechanical cooling is utilized with free cooling, the outdoor-air damper will maintain its current position at the time the compressor is started. If the increase in cooling capacity causes the mixed-air temperature to drop below 45°F (7°C), then the outdoor-air damper position will be decreased to the minimum position. If the mixed-air temperature continues to fall, the outdoor-air damper will close. Control returns to normal once the mixed-air temperature rises above 48°F (9°C). The power exhaust fans

will be energized and de-energized, if installed, as the outdoor-air damper opens and closes.

If field-installed accessory CO_2 sensors are connected to the EconoMi$er IV and X control, a demand controlled ventilation strategy will begin to operate. As the CO_2 level in the zone increases above the CO_2 set-point, the minimum position of the damper will be increased proportionally. As the CO_2 level decreases because of the increase in fresh air, the outdoor-air damper will be proportionally closed. For EconoMi$er IV and X operation, there must be a thermostat call for the fan (G). If the unit is occupied and the fan is on, the damper will operate at minimum position. Otherwise, the damper will be closed.

When the EconoMi$er IV and X control is in the occupied mode and a call for cooling exists (Y1 on the thermostat), the control will first check for indoor fan operation. If the fan is not on, then cooling will not be activated. If the fan is on, then the control will open the EconoMi$er IV and X damper to the minimum position.

On the initial power to the EconoMi$er® IV and X control, it will take the damper up to $2^1/_2$ minutes before it begins to position itself. After the initial power-up, further changes in damper position can take up to 30 seconds to initiate. Damper movement from full closed to full open (or vice versa) will take between $1^1/_2$ and $2^1/_2$ minutes. If free cooling can be used as determined from the appropriate changeover command (switch, dry bulb, enthalpy curve, differential dry bulb, or differential enthalpy), then the control will modulate the dampers open to maintain the mixed-air temperature set-point at 50°F (10°C) to 55°F (13°C). If there is a further demand for cooling (cooling second stage — Y2 is energized), then the control will bring on compressor stage 1 to maintain the mixed-air temperature set-point. The EconoMi$er IV and X damper will be open at maximum position.

2-Speed Note: The EconoMi$er IV and X controller will adjust the damper position as the Indoor Fan Speed changes, per its configured values.

Heating

The sequence of operation for the heating is the same as an electro-mechanical unit with no economizer. The only difference is how the economizer acts. The economizer will stay at the Economizer Minimum Position while the evaporator fan is operating. The outdoor-air damper is closed when the indoor fan is not operating. Refer to Service and Maintenance Manual for further details.

Optional Humidi-MiZer® dehumidification system

Units with the factory equipped Humidi-MiZer system option are capable of providing multiple modes of improved dehumidification as a variation of the normal cooling cycle. The Humidi-MiZer system option includes additional valves in the liquid line and discharge line of each refrigerant circuit, a small reheat condenser coil downstream of the evaporator, and variable-speed control of some or all outdoor fans. Operation of the revised refrigerant circuit for each mode is described below.

The Humidi-MiZer system provides three sub-modes of operation: Cool, Reheat1, and Reheat2.

Cool mode — Provides a normal ratio of Sensible and Latent Cooling effect from the evaporator coil.

Reheat1 — Provides increased Latent Cooling while slightly reducing the Sensible Cooling effect.

Reheat2 — Provides normal Latent Cooling but with null or minimum Sensible Cooling effect delivered to the space.

The Reheat1 and Reheat2 modes are available when the unit is not in a Heating mode and when the Low Ambient Lockout switch is closed.

Refer to the following figures for single stage and 2 stage piping flow diagrams.

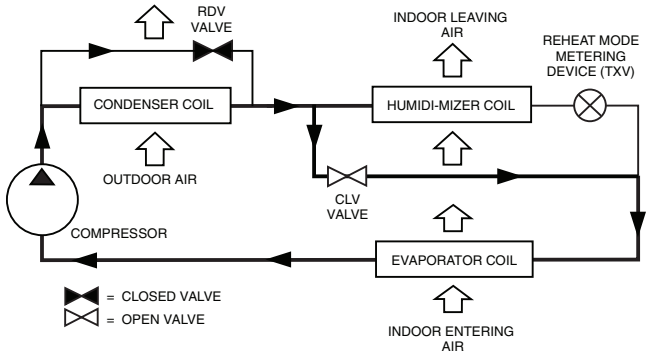
RTU Open controller (factory option)

For details on operating 48/50FC units equipped with the factory-installed RTU Open controller option, refer to Factory Installed RTU Open Multi-Protocol Controller Controls, Start-Up, Operation and Troubleshooting manual.

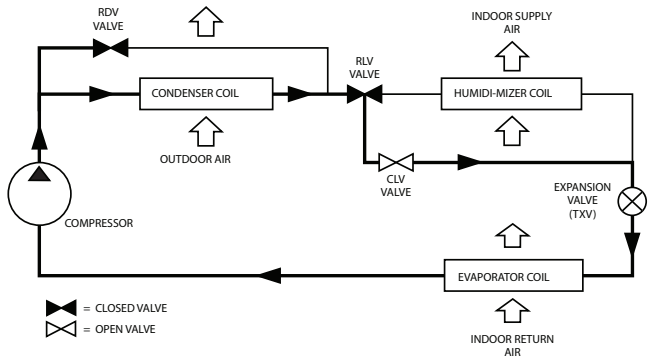
SystemVu™ controller (factory option)

For details on operating 48/50FC units equipped with the factory-installed SystemVu controller option, refer to FC/GC Series Single Package Rooftop Units with SystemVu Controller Controls, Start-Up, Operation and Troubleshooting manual.

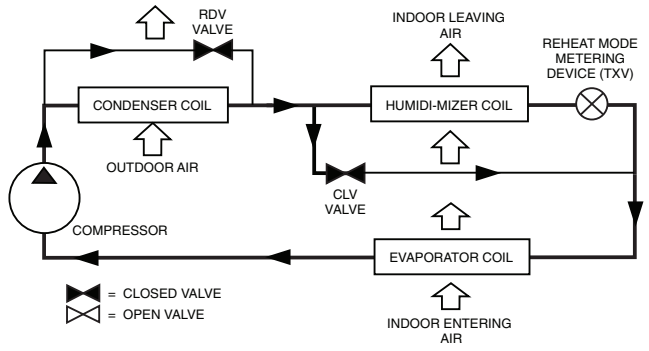
NORMAL COOLING MODE — HUMIDI-MIZER® SYSTEM WITH SINGLE STAGE COOLING



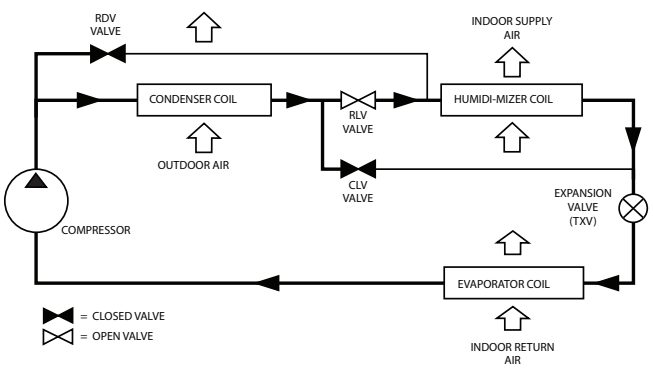
NORMAL COOLING MODE — HUMIDI-MIZER® SYSTEM WITH 2 STAGE COOLING



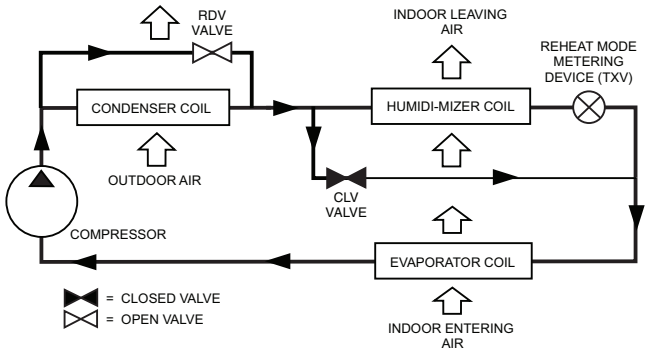
SUBCOOLING MODE (REHEAT 1) — HUMIDI-MIZER SYSTEM WITH SINGLE STAGE COOLING



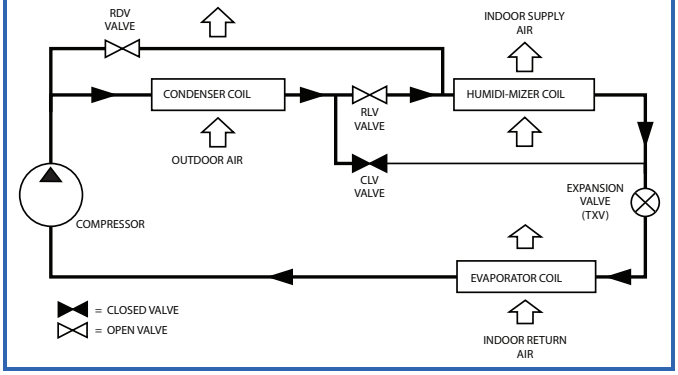
SUBCOOLING MODE (REHEAT 1) — HUMIDI-MIZER SYSTEM WITH 2 STAGE COOLING



HOT GAS REHEAT MODE (REHEAT2) — HUMIDI-MIZER SYSTEM WITH SINGLE STAGE COOLING



HOT GAS REHEAT MODE (REHEAT2) — HUMIDI-MIZER SYSTEM WITH 2 STAGE COOLING



Minimum operating ambient temperature (cooling)

In mechanical cooling mode, your Carrier rooftop unit can safely operate down to an outdoor ambient temperature of 40°F (4°C). It is possible to provide cooling at lower outdoor ambient temperatures by using less outside air, economizers, and/or accessory low ambient kits.

Maximum operating ambient temperature (cooling)

The maximum operating ambient temperature for cooling mode is 115°F (46°C). While cooling operation above 115°F (46°C) may be possible, it could cause either a reduction in performance, reliability, or a protective action by the unit's internal safety devices.

Multiple motor and drive packages

Some applications need larger horsepower motors, some need more airflow, and some need both. Regardless of the case, your Carrier expert has a factory installed combination to meet your application. A wide selection of motors are available, factory installed, to handle nearly any application.

Stainless steel heat exchanger (48FC units only)

The stainless steel heat exchanger option provides the tubular heat exchanger be made out of a minimum 20 gage type 409 stainless steel for applications where the mixed air to the heat exchanger is expected to drop below 45°F (7°C). Stainless steel may be specified on applications where the presence of airborne contaminants require its use (applications such as paper mills) or in area with very high outdoor humidity that may result in severe condensation in the heat exchanger during cooling operation.

Minimum mixed air temperature (heating) (48FC units only)

Using the factory settings, the minimum temperatures for the mixed air (the combined temperature of the warm return air and the cold outdoor air) entering the dimpled, gas heat exchangers are shown in the following table.

MINIMUM TEMPERATURE FOR MIXED AIR TEMPERATURE

ALUMINIZED	STAINLESS STEEL
50°F (10°C) Continuous	40°F (4°C) Continuous
45°F (7°C) Intermittent	35°F (2°C) Intermittent

Operating at lower mixed-air temperatures may be possible, if a field-supplied, outdoor air thermostat initiates both heat stages when the temperature is less than the minimum temperatures listed above. Please contact your local Carrier representative for assistance.

Minimum and maximum airflow (heating and cooling)

To maintain safe and reliable operation of your rooftop, operate within the heating airflow limits during heating mode and cooling airflow limits during cooling mode. Operating above the max may cause blow-off, undesired airflow noise, or airflow related problems with the rooftop unit. Operating below the min may cause problems with coil freeze-up and unsafe heating operation. Heating and cooling limitations differ when evaluating operating CFM, the minimum value is the HIGHER of the cooling and heating minimum CFM values published on page 8 and the maximum value is the LOWER of the cooling and heating minimum values published on page 8.

Heating-to-cooling changeover

Your unit will automatically change from heating to cooling mode when using a thermostat with an auto-changeover feature.

Airflow

All units are draw-though in cooling mode and blow-through in heating mode.

Outdoor air application strategies

Economizers reduce operating expenses and compressor run time by providing a free source of cooling and a means of ventilation to match application changing needs. In fact, they should be considered for most applications. Also, consider the various economizer control methods and their benefits, as well as sensors required to accomplish your application goals. Please contact your local Carrier representative for assistance.

Motor limits, break horsepower (BHP)

Due to internal design of Carrier units, the air path, and specially designed motors, the full horsepower (maximum continuous BHP) band, as listed in the Fan Performance tables, can be used with the utmost confidence. There is no need for extra safety factors, as Carrier motors are designed and rigorously tested to use the entire, listed BHP range without either nuisance tripping or premature motor failure.

Propane heating (48FC units only)

Propane has different physical qualities than natural gas. As a result, propane requires different fuel to air mixture. To optimize the fuel/air mixture for propane, Carrier sells different burner orifices in an easy to install accessory kit. To select the correct burner orifices or determine the heat capacity for a propane application, use either the selection software, or the unit's service manual.

High altitude heating

High altitudes have less oxygen, which affects the fuel/air mixture in heat exchangers. In order to maintain a proper fuel/air mixture, heat exchangers operating in altitudes above 2000 ft (610 m) require different orifices. To select the correct burner orifices or determine the heat capacity for a high altitude application, use either the selection software, or the unit's service manual.

High altitudes have less oxygen, which means heat exchangers need less fuel. The new gas orifices in this field-installed kit make the necessary adjustment for high altitude applications. They restore the optimal fuel to air mixture and maintain healthy combustion on altitudes above 2000 ft (610 m).

NOTE: Typical natural gas heating value ranges from 975 to 1050 Btu/ft^3 at sea level nationally. The heating value goes down approximately 1.7% per every thousand feet elevation. Standard factory orifices can typically be used up to 2000 ft (610 m) elevation without any operational issues.

Sizing a rooftop

Bigger is not necessarily better. While an air conditioner needs to have enough capacity to meet the design loads, it does not need excess capacity. In fact, excess capacity typically results in very poor part load performance and humidity control.

Using higher design temperatures than ASHRAE recommends for your location, adding "safety factors" to the calculated load, are all signs of oversizing air conditioners. Oversizing the air conditioner leads to poor humidity control, reduced efficiency, higher utility bills, larger indoor temperature swings, excessive noise, and increased wear and tear on the air conditioner.

Rather than oversizing an air conditioner, engineers should "right-size" or even slightly "under-size" air conditioners. Correctly sizing an air conditioner controls humidity better; promotes efficiency; reduces utility bills; extends equipment life, and maintains even, comfortable temperatures. Please contact your local Carrier representative for assistance.

Low ambient applications

The optional Carrier economizer can adequately cool your space by bringing in fresh, cool outside air. In fact, when so equipped, accessory low-ambient kit may not be necessary. In low ambient conditions, unless the outdoor air is excessively humid or contaminated, economizer-based "free cooling" is the preferred less costly and energy conscious method. In low ambient applications where outside air might not be desired (such as contaminated or excessively humid outdoor environments), your Carrier rooftop can operate to ambient temperatures down to –20°F (–29°C) using the recommended accessory low ambient controller.

Note about this specification:

This specification is in the "Masterformat" as published by the Construction Specification Institute. Please feel free to copy this specification directly into your building spec.

Gas Heat/Electric Cooling Packaged Rooftop

HVAC Guide Specifications

Size Range: **3 to 6 Nominal Tons**

Carrier Model Number: **48FC*04-07**

Part 1 — (23 06 80) Schedules for Decentralized HVAC Equipment

1.01 (23 06 80.13) Decentralized Unitary HVAC Equipment Schedule

A. (23 06 80.13.A.) Rooftop unit (RTU) schedule:

1. Schedule is per the project specification requirements.

Part 2 — (23 07 16) HVAC equipment insulation

2.01 (23 07 16.13) Decentralized, Rooftop Units:

A. (23 07 16.13.A.) Evaporator fan compartment:

1. Interior cabinet surfaces shall be insulated with a minimum $^1/_2$-in. thick, minimum $1^1/_2$-lb density, flexible fiberglass insulation bonded with a phenolic binder, neoprene coated on the air side.
2. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

B. (23 07 16.13.B.) Gas Heat Compartment:

1. Aluminum foil-faced fiberglass insulation shall be used.
2. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

Part 3 — (23 09 13) Instrumentation and control devices for HVAC

3.01 (23 09 13.23) Sensors and Transmitters

A. (23 09 13.23.A.) Thermostats

1. Thermostat must
   a. energize both "W" and "G" when calling for heat.
   b. have capability to energize 1 or 2 stages of cooling, and 2 different stages of heating.
   c. include capability for occupancy scheduling.

Part 4 — (23 09 23) Direct Digital Control system for HVAC

4.01 (23 09 23.13) Decentralized, Rooftop Units:

A. (23 09 23.13.A.) SystemVu™ intelligent integrated Direct Digital Control (DDC) shall provide:

1. Integrated unit operation for comfort cooling, heating ventilation as well as all monitoring, recording and reporting capabilities. Controller shall also provide diagnostics and alarms of abnormal unit operation through the controller. Controller shall have an intuitive user display and be able to be used in a standalone operation or via building automation system (BAS).
2. Quick Unit Status LEDs of: Run – meaning all systems are go, ALERT – that indicates there is currently a non-critical issue with the unit, like filters need to be replaced and FAULT – that indicates the unit has a critical issue and will possibly shut down.
3. Six large navigation keys for easy access. Navigation keys shall consist of: TEST, BACK, ENTER, and MENU along with UP and DOWN arrows.
4. Full back lit user display with 4 line by 30 character text capabilities. Display menu shall be designed to provide guided major menus and sub menus main menus provided below:
   a. Shutdown Unit
   b. Run Status
   c. Settings
   d. Alerts/Faults
   e. Service
   f. Inputs
   g. Outputs
   h. USB
5. The capability for standalone operation with conventional thermostat/sensor or use with building automation systems (BAS) of Carrier i-Vu®, BACnet and Carrier Comfort Network® (CCN) systems. No special modules or boards are required for these capabilities. Has the capability to work with Equipment Touch™ and System Touch™ devices and ZS Sensors.
6. The ability to read refrigerant pressures at display or via BAS network of; Discharge Pressure and Suction Pressure. The need for traditional refrigerant gages is not required.
7. USB Data Port for flash drive interaction. This will allow the transfer of data for uploads, downloads, perform software upgrades, back-up and restore data and file transfer data such as component number of starts and run hours.
8. Reverse Rotation Protection of compressors if field three phase wiring is misapplied.
9. Provide Service Capabilities of:
   a. Auto run test
   b. Manual run test
   c. Component run hours and starts
   d. Commissioning reports
   e. Data logging
   f. Alarm history

10. Economizer control and diagnostics. Set up economizer operation, receive feedback from actuator. Also meets the most recent California Title 24, ASHRAE 90.1 and IECC Fault Detection and Diagnostic (FDD) requirements.
11. Unit cooling operation down to 40°F (4°C).
12. Controller shall have easy access connections around the controller perimeter area and consist of Mate-N-Lok, terminal block and RJ style modular jack connections.
13. 365 day real time clock, 20 holiday schedules along with occupied and unoccupied scheduling.
14. Auto-Recognition for easy installation and commissioning of devices like economizers, space sensors etc.
15. A 5°F temperature difference between cooling and heating set points to meet the latest ASHRAE 90.1 Energy Standard.
16. Contain return air sensor, supply air sensor and outdoor air sensor to help monitor and provide data for the unit comfort operation, diagnostic and alarms.
17. Use of Carrier's field accessory hand-held Navigator™ display, Equipment Touch and System Touch devices.
18. Units with the factory-installed Humidi-MiZer® system option are capable of providing multiple modes of improved dehumidification as a variation of the normal cooling cycle.
19. Supply Air Tempering control operates the gas or electric heat to maintain a minimum supply air temperature during conditions where very cold outdoor air causes the supply air temperature to fall below the configured Supply Air Tempering Setpoint. This occurs during periods where DCV is active and increasing the amount of outdoor air or in cases where the system is operating at very low airflow and the calculated economizer position has increased to maintain a constant ventilation rate.
20. Demand limiting in SystemVu™ is achieved through set point expansion. The systems heating and cooling set points are expanded in steps or levels. The degree to which the set points may be expanded is defined by the 6 demand level offsets and the 2 commanded demand limit levels.
21. 3-year limited part warranty.

B. (23 09 23.13.B.) RTU Open Protocol, Direct Digital Controller:
1. Shall be ASHRAE 62 compliant.
2. Shall accept 18 - 30VAC, 50 - 60Hz, and consumer 15VA or less power.
3. Shall have an operating temperature range from –40°F (–40°C) to 130°F (54°C), 10% to 90% RH (non-condensing).
4. Shall include built-in protocol for BACnet[1] (MS/TP and PTP modes), Modbus[2] (RTU and ASCII), Johnson N2 and LonWorks[3]. LonWorks Echelon processor required for all Lon applications shall be contained in separate communication board.
5. Shall allow access of up to 62 network variables (SNVT). Shall be compatible with all open controllers.
6. Baud rate controller shall be selectable using a dipswitch.
7. Shall have an LED display independently showing the status of serial communication, running, errors, power, all digital outputs, and all analog inputs.
8. Shall accept the following inputs: space temperature, setpoint adjustment, outdoor air temperature, indoor air quality, outdoor air quality, compressor lock-out, fire shutdown, enthalpy switch, and fan status/filter status/humidity/remote occupancy.
9. Shall provide the following outputs: economizer, fan, cooling stage 1, cooling stage 2, heat stage 1, heat stage 2, exhaust, reversing valve/high fan speed.
10. Shall have built-in surge protection circuitry through solid-state polyswitches. Polyswitches shall be used on incoming power and network connections. Polyswitches will return to normal when the "trip" condition clears.
11. Shall have a battery back-up capable of a minimum of 10,000 hours of data and time clock retention during power outages.
12. Shall have built-in support for Carrier technician tool.
13. Shall include an RS-485 protocol communication port, an access port for connection of either a computer or a Carrier technician tool, an RS-485 port for network communication to intelligent space sensors and displays, and a port to connect an optional LonWorks communications card.
14. Software upgrades will be accomplished by either local or remote download. No software upgrades through chip replacements are allowed.

Part 5 — (23 09 33) Electric and Electronic Control System for HVAC

5.01 (23 09 33.13) Decentralized, Rooftop Units:

A. (23 09 33.13.A.) General:
1. Shall be complete with self-contained low-voltage control circuit protected by a resettable

1. BACnet is a registered trademark of ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers).
2. Modbus is a registered trademark of Schneider Electric.
3. LonWorks is a registered trademark of Echelon Corporation.

circuit breaker on the 24-v transformer side. Transformer shall have 75VA capability.

2. Shall utilize color-coded wiring.
3. Shall include a Unit Control Board to conveniently and safely provide connection points for vital control functions such as: smoke detectors, phase monitor, gas controller, economizer, thermostat, DDC control options, and low and high pressure switches. Controller shall also provide an intuitive means to adjust the indoor fan speed through a simple switch and pot adjustment design.
4. The heat exchanger shall be controlled by an integrated gas controller (IGC) microprocessor. See heat exchanger section of this specification.
5. Unit shall include a minimum of one 8-pin screw terminal connection board for connection of control wiring.

B. (23 09 33.13.B.) Safeties:

1. Compressor over-temperature, over-current. High internal pressure differential.
2. Low pressure switch.
   a. Low pressure switch shall use different color wire than the high pressure switch. The purpose is to assist the installer and service technician to correctly wire and or troubleshoot the rooftop unit.
3. High pressure switch.
   a. High pressure switch shall use different color wire than the low pressure switch. The purpose is to assist the installer and service technician to correctly wire and or troubleshoot the rooftop unit.
4. Automatic reset, motor thermal overload protector.
5. Heating section shall be provided with the following minimum protections:
   a. High temperature limit switches.
   b. Induced draft motor speed sensor.
   c. Flame rollout switch.
   d. Flame proving controls.

Part 6 — (23 09 93) Sequence of Operations for HVAC Controls

6.01 (23 09 93.13) Decentralized, Rooftop Units:

A. (23 09 93.13.A.) INSERT SEQUENCE OF OPERATION

Part 7 — (23 40 13) Panel Air Filters

7.01 (23 40 13.13) Decentralized, Rooftop Units:

A. (23 40 13.13.A.) Standard filter section:

1. Shall consist of factory installed, low velocity, disposable 2-in. thick fiberglass filters of commercially available sizes.
2. Unit shall use only one filter size. Multiple sizes are not acceptable.
3. Filters shall be accessible through an access panel with “no-tool” removal as described in the unit cabinet section of this specification (23 81 19.13.G).

Part 8 — (23 81 19) Self-Contained Air Conditioners

8.01 (23 81 19.13) Small-Capacity Self-Contained Air Conditioners:

A. (23 81 19.13.A.) General:

1. Outdoor, rooftop mounted, electrically controlled, heating and cooling unit utilizing a fully hermetic scroll compressor(s) for cooling duty and gas combustion for heating duty.
2. Factory assembled, single-piece heating and cooling rooftop unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, and special features required prior to field start-up.
3. Unit shall use Puron® (R-410A) refrigerant.
4. Unit shall be installed in accordance with the manufacturer’s instructions.
5. Unit must be selected and installed in compliance with local, state, and federal codes.

B. (23 81 19.13.B.) Quality Assurance:

1. Unit meets ASHRAE 90.1 minimum efficiency requirements.
2. Unit shall be rated in accordance with AHRI Standards 210/240 (04-06 sizes) or 340/360 (07 size).
3. Unit shall be designed to conform to ASHRAE 15.
4. Unit shall be UL-tested and certified in accordance with ANSI Z21.47 Standards and UL-listed and certified under Canadian standards as a total package for safety requirements.
5. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
6. Unit casing shall be capable of withstanding 500 hour salt spray exposure per ASTM B117 (scribed specimen).
7. Unit shall be designed in accordance with ISO 9001, and shall be manufactured in a facility registered by ISO 9001:2015.
8. Roof curb shall be designed to conform to NRCA Standards.
9. Unit shall be subjected to a completely automated run test on the assembly line. The data for each unit will be stored at the factory, and must be available upon request.
10. Unit shall be designed in accordance with UL Standard 1995, including tested to withstand rain.
11. Unit shall be constructed to prevent intrusion of snow and tested to prevent snow intrusion into the control box up to 40 mph.

12. Unit shake tested to assurance level 1, ASTM D4169 to ensure shipping reliability.

C. (23 81 19.13.C.) Delivery, Storage, and Handling:
   1. Unit shall be stored and handled per manufacturer's recommendations.
   2. Lifted by crane requires either shipping top panel or spreader bars.
   3. Unit shall only be stored or positioned in the upright position.

D. (23 81 19.13.D.) Project Conditions:
   1. As specified in the contract.

E. (23 81 19.13.E.) Operating Characteristics:
   1. Unit shall be capable of starting and running at 115°F (46°C) ambient outdoor temperature, meeting maximum load criteria of AHRI Standard 210/240 or 340/360 at ±10% voltage.
   2. Compressor with standard controls shall be capable of operation down to 40°F (4°C), ambient outdoor temperatures. Accessory winter start kit is necessary if mechanically cooling at ambient temperatures down to 25°F (–4°C).
   3. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.
   4. Unit shall be factory configured for vertical supply and return configurations.
   5. Unit shall be field convertible from vertical to horizontal airflow on all models. No special kit required.
   6. Unit shall be capable of mixed operation: vertical supply with horizontal return or horizontal supply with vertical return.

F. (23 81 19.13.F.) Electrical Requirements:
   1. Main power supply voltage, phase, and frequency must match those required by the manufacturer.

G. (23 81 19.13.G.) Unit Cabinet:
   1. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a prepainted baked enamel finish on all externally exposed surfaces.
   2. Unit cabinet exterior paint shall be: film thickness, (dry) 0.003 inches minimum, gloss (per ASTM D523, 60°F/16°C): 60, Hardness: H-2H Pencil hardness.
   3. Evaporator fan compartment interior cabinet insulation shall conform to AHRI Standards 210/240 and or 340/360 minimum exterior sweat criteria. Interior surfaces shall be insulated with a minimum $^1/_2$-in. thick, 1 lb density, flexible fiberglass insulation, neoprene coated on the air side. Aluminum foil-faced fiberglass insulation shall be used in the gas heat compartment.
   4. Base of unit shall have a minimum of four locations for thru-the-base gas and electrical connections (factory-installed or field-installed), standard.
   5. Base Rail:
      a. Unit shall have base rails on a minimum of 2 sides.
      b. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.
      c. Holes shall be provided in the base rail for moving the rooftop by fork truck.
      d. Base rail shall be a minimum of 16 gage thickness.
   6. Condensate pan and connections:
      a. Shall be a sloped condensate drain pan made of a corrosion resistant material.
      b. Shall comply with ASHRAE Standard 62.
      c. Shall use a $^3/_4$-in. 14 NPT drain connection, possible either through the bottom or side of the drain pan. Connection shall be made per manufacturer's recommendations.
   7. Top panel:
      a. Shall be a single piece top panel on all sizes.
   8. Gas Connections:
      a. All gas piping connecting to unit gas valve shall enter the unit cabinet at a single location on side of unit (horizontal plane).
      b. Thru-the-base capability
         1) Standard unit shall have a thru-the-base gas-line location using a raised, embossed portion of the unit basepan.
         2) Optional, factory approved, water-tight connection method must be used for thru-the-base gas connections.
         3) No basepan penetration, other than those authorized by the manufacturer, is permitted.
   9. Electrical Connections:
      a. All unit power wiring shall enter unit cabinet at a single, factory prepared, knockout location.
      b. Thru-the-base capability.
         1) Standard unit shall have a thru-the-base electrical location(s) using a raised, embossed portion of the unit basepan.
         2) Optional, factory approved, water-tight connection method must be used for thru-the-base electrical connections.
         3) No basepan penetration, other than those authorized by the manufacturer, is permitted.
   10. Component access panels (standard):
      a. Cabinet panels shall be easily removable for servicing.
      b. Unit shall have one factory installed, toolless, removable, filter access panel.

c. Panels covering control box, indoor fan, indoor fan motor, gas components (where applicable), and compressors shall have molded composite handles.

d. Handles shall be UV modified, composite. They shall be permanently attached, and recessed into the panel.

e. Screws on the vertical portion of all removable access panel shall engage into heat resistant, molded composite collars.

f. Collars shall be removable and easily replaceable using manufacturer recommended parts.

H. (23 81 19.13.H.) Gas Heat:

1. General:

a. Heat exchanger shall be an induced draft design. Positive pressure heat exchanger designs shall not be allowed.

b. Shall incorporate a direct-spark ignition system and redundant main gas valve.

c. Gas supply pressure at the inlet to the rooftop unit gas valve must match that required by the manufacturer.

2. The heat exchanger shall be controlled by an integrated gas controller (IGC) microprocessor.

a. IGC board shall notify users of fault using an LED (light-emitting diode).

b. The LED shall be visible without removing the control box access panel.

c. IGC board shall contain algorithms that modify evaporator fan operation to prevent future cycling on high temperature limit switch.

d. Unit shall be equipped with anti-cycle protection with one short cycle on unit flame rollout switch or 4 continuous short cycles on the high temperature limit switch. Fault indication shall be made using an LED.

3. Standard Heat Exchanger construction:

a. Heat exchanger shall be of the tubular-section type constructed of a minimum of 20-gage steel coated with a nominal 1.2 mil aluminum-silicone alloy for corrosion resistance.

b. Burners shall be of the in-shot type constructed of aluminum-coated steel.

c. Burners shall incorporate orifices for rated heat output up to 2000 ft (610 m) elevation. Additional accessory kits may be required for applications above 2000 ft (610 m) elevation, depending on local gas supply conditions.

d. Each heat exchanger tube shall contain multiple dimples for increased heating effectiveness.

4. Optional Stainless Steel Heat Exchanger construction:

a. Use energy saving, direct-spark ignition system.

b. Use a redundant main gas valve.

c. Burners shall be of the in-shot type constructed of aluminum-coated steel.

d. All gas piping shall enter the unit cabinet at a single location on side of unit (horizontal plane).

e. The optional stainless steel heat exchanger shall be of the tubular-section type, constructed of a minimum of 20-gage type 409 stainless steel.

f. Type 409 stainless steel shall be used in heat exchanger tubes and vestibule plate.

g. Complete stainless steel heat exchanger allows for greater application flexibility.

5. Optional Low NOx Heat Exchanger construction:

a. Low NOx reduction shall be provided to reduce nitrous oxide emissions to meet California's Air Quality Management District (SCAQMD) low-NOx emissions requirement of 40 nanograms per joule or less.

b. Primary tubes and vestibule plates on low NOx units shall be 409 stainless steel. Other components shall be aluminized steel.

6. Induced draft combustion motor and blower

a. Shall be a direct-drive, single inlet, forward-curved centrifugal type.

b. Shall be made from steel with a corrosion resistant finish.

c. Shall have permanently lubricated sealed bearings.

d. Shall have inherent thermal overload protection.

e. Shall have an automatic reset feature.

I. (23 81 19.13.I.) Coils:

1. Standard Aluminum Fin-Copper Tube Coils:

a. Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.

b. Evaporator coils shall be leak tested to 150 psig, pressure tested to 450 psig, and qualified to UL 1995 burst test at 1775 psig.

c. Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 1995 burst test at 1980 psig.

2. Optional Pre-coated aluminum-fin condenser coils (3 Phase Models Only):

a. Shall have a durable epoxy-phenolic coating to provide protection in mildly corrosive coastal environments.

b. Coating shall be applied to the aluminum fin stock prior to the fin stamping process to create an inert barrier between the aluminum fin and copper tube.

c. Epoxy-phenolic barrier shall minimize galvanic action between dissimilar metals.

d. Corrosion durability of fin stock shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90.

e. Corrosion durability of fin stock shall be confirmed through testing to have no visible corrosion after 48 hour immersion in a room temperature solution of 5% salt, 1% acetic acid.

f. Fin stock coating shall pass 2000 hours of the following: one week exposure in the prohesion chamber followed by one week of accelerated ultraviolet light testing. Prohesion chamber: the solution shall contain 3.5% sodium chloride and 0.35% ammonium sulfate. The exposure cycle is one hour of salt fog application at ambient followed by one hour drying at 95°F (35°C).

3. Optional Copper-fin evaporator and condenser coils (3 Phase Models Only):

a. Shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets.

b. Galvanized steel tube sheets shall not be acceptable.

c. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan.

4. Optional E-coated aluminum-fin evaporator and condenser coils (3 Phase Models Only):

a. Shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins.

b. Coating process shall ensure complete coil encapsulation of tubes, fins and headers.

c. Color shall be high gloss black with gloss per ASTM D523-89.

d. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges.

e. Superior hardness characteristics of 2H per ASTM D3363-92A and cross-hatch adhesion of 4B-5B per ASTM D3359-93.

f. Impact resistance shall be up to 160 in. lb (ASTM D2794-93).

g. Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92).

h. Corrosion durability shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90.

J. (23 81 19.13.J.) Refrigerant Components:

1. Refrigerant circuit shall include the following control, safety, and maintenance features:

a. Fixed orifice metering system on 04-06 models and TXV on 07 size models shall include a multiple feed distribution system that optimizes coil performance.

b. Refrigerant filter drier - Solid core design.

c. Service gage connections on suction and discharge lines.

d. Pressure gage access through a specially designed access port in the top panel of the unit.

2. There shall be gage line access port in the skin of the rooftop, covered by a black, removable plug.

a. The plug shall be easy to remove and replace.

b. When the plug is removed, the gage access port shall enable maintenance personnel to route their pressure gage lines.

c. This gage access port shall facilitate correct and accurate condenser pressure readings by enabling the reading with the compressor access panel on.

d. The plug shall be made of a leak proof, UV-resistant, composite material.

3. Compressors:

a. Unit shall use fully hermetic, scroll compressor for each independent refrigeration circuit.

b. Compressor motors shall be cooled by refrigerant gas passing through motor windings.

c. Compressors shall be internally protected from high discharge temperature conditions.

d. Compressors shall be protected from an over-temperature and over-amperage conditions by an internal, motor overload device.

e. Compressor shall be factory mounted on rubber grommets.

f. Compressor motors shall have internal line break thermal, current overload and high pressure differential protection.

g. Crankcase heaters shall not be required for normal operating range, unless required by compressor manufacturer due to refrigerant charge limits.

h. Compressor on 04-06 models shall be of a single stage cooling capacity design and 07 models shall be a two stage cooling capacity design.

K. (23 81 19.13.K.) Filter Section:
   1. Filters access is specified in the unit cabinet section of this specification.
   2. Filters shall be held in place by a pivoting filter tray, facilitating easy removal and installation.
   3. Shall consist of factory installed, low velocity, throw-away 2-in. thick fiberglass filters.
   4. Filters shall be standard, commercially available sizes.
   5. Only one size filter per unit is allowed.

L. (23 81 19.13.L.) Evaporator Fan and Motor with EcoBlue™ Technology:
   1. Direct Drive Evaporator fan motor:
      a. Shall be a ECM motor design.
      b. Shall have permanently lubricated bearings.
      c. Shall have inherent automatic-reset thermal overload protection.
      d. Shall have slow ramp up to speed capabilities.
      e. Shall require no fan/motor belts for operation, adjustments and or initial fan speed set up.
      f. Fan DC voltage set up on Unit Control Board can eliminate the need of removal of blower access door, required on conventional belt drive systems.
      g. Shall be internally protected from electrical phase reversal and loss.
   2. Evaporator Fan:
      a. Shall be easily set with dedicated selection switch and adjustment pot on unit control board or through SystemVu™ controller.
      b. On sizes 04-06 single speed indoor fan operation provided and on 07 size model with two stage cooling capacity control, the indoor fan speed is automatically controlled to meet the code-compliant 66% low fan speed and 100% at full fan speed operation.
      c. Blower fan shall be a Vane Axial fan design with 75% less moving parts than a conventional belt drive system.
      d. Shall be constructed of a cast aluminum stator and high impact composite material on rotor and air inlet casing.
      e. Shall be a patented / pending design with a corrosion resistant material and dynamically balanced.
      f. Shall have slow ramp up to speed capabilities to help reduce sound and comfort issues typically associated with single speed belt drive systems.
      g. Shall be a slide out design with two screw removal.
   3. Shall include an easily accessible unit Control Board to conveniently and safely provide connection points for vital control functions such as: smoke detectors, phase monitor, gas controller, economizer, thermostat, DDC control options, and low and high pressure switches. Controller shall also provide an intuitive means to adjust the indoor fan speed through a simple switch and pot adjustment design.

M. (23 81 19.13.M.) Condenser Fans and Motors:
   1. Condenser fan motors:
      a. Shall be a totally enclosed motor.
      b. Shall use permanently lubricated bearings.
      c. Shall have inherent thermal overload protection with an automatic reset feature.
      d. Shall use a shaft-down design on all sizes.
   2. Condenser Fans:
      a. Shall be a direct-driven propeller type fan constructed of high impact composite material.
      b. Shall have high impact composite blades completely formed into one piece without blade fasteners or connectors and shall be dynamically balanced.

N. (23 81 19.13.N.) Special Features Options and Accessories:
   1. Integrated EconoMi$er® IV, EconoMi$er2, and EconoMi$er X low leak rate models. (EconoMi$er 2, IV and X are factory-installed on 04-06 models. EconoMi$er 2 and X are factory-installed on 07 models. All are field-installed on all 3 and 1 phase models.)
      a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
      b. Independent modules for vertical or horizontal return configuration shall be available. Vertical return modules shall be available as a factory installed option.
      c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
      d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
      e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
      f. Standard leak rate shall be equipped with dampers not to exceed 2% leakage at 1 in. wg pressure differential.

g. Economizer controller on EconoMi$er IV models shall be Honeywell W7212 that provides:
   1) Combined minimum and DCV maximum damper position potentiometers with compressor staging relay.
   2) Functions with solid-state analog enthalpy or dry bulb changeover control sensing.
   3) LED indicators for: when free cooling is available, when module is in DCV mode, when exhaust fan contact is closed.

h. Economizer controller on EconoMi$er X models shall be the Honeywell W7220 that provides:
   1) 2-line LCD interface screen for setup, configuration and troubleshooting.
   2) On-board Fault Detection and Diagnostics (FDD) that senses and alerts when the economizer is not operating properly, per California Title 24, ASHRAE 90.1 and IECC[1].
   3) Sensor failure loss of communication identification.
   4) Automatic sensor detection.
   5) Capabilities for use with multiple-speed or single speed indoor fan systems.
   6) Utilize digital sensors: Dry bulb and Enthalpy.

i. Economizer controller on EconoMi$er 2 models with RTU Open or SystemVu™ controls shall be a 4 to 20mA design controlled directly by the controller. RTU Open and SystemVu meet California Title 24, ASHRAE 90.1 and IECC Fault Detection and Diagnostic (FDD) requirements.

j. Shall be capable of introducing up to 100% outdoor air.

k. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE 90.1 requirements.

l. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.

m. Dry bulb outdoor air temperature sensor shall be provided as standard. Enthalpy sensor is also available on factory-installed economizers only. Outdoor air sensor setpoint shall be adjustable and shall range from 40°F to 100°F (4°C to 38°C). Additional sensor options shall be available as accessories.

n. The economizer controller shall also provide control of an accessory power exhaust unit function. Factory set at 100%, with a range of 0% to 100%.

o. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.

p. Dampers shall be completely closed when the unit is in the unoccupied mode.

q. Economizer controller shall accept a 2 to 10 Vdc CO_2 sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor air damper to provide ventilation based on the sensor input.

r. Compressor lockout temperature on W7220 control is adjustable from –45°F to 80°F, set at a factory default of 32°F. W7212 control opens at 35°F (2°C) and closes at 50°F (10°C).

s. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.

t. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.

2. Integrated EconoMi$er®2, and EconoMi$er X Ultra Low Leak rate models. (Factory-installed on 3 phase models only. Field-installed on all 3 and 1 phase models.)
   a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
   b. Independent modules for vertical or horizontal return configuration shall be available. Vertical return modules shall be available as a factory installed option.
   c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
   d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
   e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.
   f. Ultra Low Leak design meets California Title 24 section 140.4 and ASHRAE 90.1 requirements for 4 cfm per sq.ft on the outside air dampers and 10 cfm per sq. ft on the return dampers.
   g. Economizer controller on EconoMi$er X models shall be the Honeywell W7220 that provides:
      1) 2-line LCD interface screen for setup, configuration and troubleshooting.
      2) On-board Fault Detection and Diagnostics (FDD) that senses and alerts when the economizer is not operating properly, per California Title 24, ASHRAE 90.1 and IECC.

1. IECC is a registered trademark of the International Code Council, Inc.

3) Sensor failure loss of communication identification.
4) Automatic sensor detection.
5) Capabilities for use with multiple-speed indoor fan systems.
6) Utilize digital sensors: Dry bulb and Enthalpy.

h. Economizer controller on EconoMi$er 2 models with RTU Open or SystemVu™ controls shall be a 4-20mA design controlled directly by the controller. RTU Open and SystemVu meet California Title 24, ASHRAE 90.1 and IECC Fault Detection and Diagnostic (FDD) requirements.

i. Shall be capable of introducing up to 100% outdoor air.

j. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE 90.1 requirements.

k. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.

l. Dry bulb outdoor air temperature sensor shall be provided as standard. Enthalpy sensor is also available on factory-installed economizers only. Outdoor air sensor setpoint shall be adjustable and shall range from 40°F to 100°F (4°C to 38°C). Additional sensor options shall be available as accessories.

m. The economizer controller shall also provide control of an accessory power exhaust unit function. Factory set at 100%, with a range of 0% to 100%.

n. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.

o. Dampers shall be completely closed when the unit is in the unoccupied mode.

p. Economizer controller shall accept a 2 to 10 vdc CO_2 sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor air damper to provide ventilation based on the sensor input.

q. Compressor lockout temperature on W7220 control is adjustable from –45°F to 80°F, set at a factory default of 32°F. W7212 control opens at 35°F (2°C) and closes at 50°F (10°C).

r. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.

s. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.

3. Two-Position Damper (Factory-installed on 3-Phase 04-06 Models Only. Field-installed on all 3 and 1 Phase Models):
   a. Damper shall be a Two-Position Damper. Damper travel shall be from the full closed position to the field adjustable %-open setpoint.
   b. Damper shall include adjustable damper travel from 25% to 100% (full open).
   c. Damper shall include single or dual blade, gear driven dampers and actuator motor.
   d. Actuator shall be direct coupled to damper gear. No linkage arms or control rods shall be acceptable.
   e. Damper will admit up to 100% outdoor air for applicable rooftop units.
   f. Damper shall close upon indoor (evaporator) fan shutoff and/or loss of power.
   g. The damper actuator shall plug into the rooftop unit's wiring harness plug. No hard wiring shall be required.
   h. Outside air hood shall include aluminum water entrainment filter.
4. Manual damper (Field-installed only):
   a. Manual damper package shall consist of damper, air inlet screen, and rain hood which can be preset to admit up to 25 or 50% outdoor air for year round ventilation.
5. Humidi-MiZer® Adaptive Dehumidification System (3 Phase Models Only):
   a. The Humidi-MiZer Adaptive Dehumidification System shall be factory installed and shall provide greater dehumidification of the occupied space by two modes of dehumidification operations in addition to its normal design cooling mode:
      1) Subcooling mode further sub cools the hot liquid refrigerant leaving the condenser coil when both temperature and humidity in the space are not satisfied.
      2) Hot gas reheat mode shall mix a portion of the hot gas from the discharge of the compressor with the hot liquid refrigerant leaving the condenser coil to create a two-phase heat transfer in the system, resulting in a neutral leaving air temperature when only humidity in the space is not satisfied.
      3) Includes low ambient controller.
6. Low Ambient Control Package:
   a. Controller shall control coil head pressure by condenser fan speed modulation or condenser fan cycling and wind baffles.
   b. Shall consist of solid-state control and condenser coil temperature sensor to maintain condensing temperature between 90°F

(32°C) and 110°F (43°C) at outdoor ambient temperatures down to –20°F (–29°C).

7. Propane Conversion Kit:
   a. Package shall contain all the necessary hardware and instructions to convert a standard natural gas unit for use with liquefied propane, up to 2000 ft (610m) elevation.
   b. Additional accessory kits may be required for applications above 2000 ft (610m) elevation.
8. Flue Shield:
   a. Flue shield shall provide protection from the hot sides of the gas flue hood.
9. Condenser Coil Hail Guard Assembly (Factory-installed on 3 Phase Models Only. Field-installed on all 3 and 1 Phase Models.)
   a. Shall protect against damage from hail.
   b. Shall be either hood style or louvered.
10. Unit-Mounted, Non-Fused Disconnect Switch (Available on units with MOCPs of 80 amps or less):
    a. Switch shall be factory installed, internally mounted.
    b. National Electric Code (NEC) and UL approved non-fused switch shall provide unit power shutoff.
    c. Shall be accessible from outside the unit.
    d. Shall provide local shutdown and lockout capability.
    e. Sized only for the unit as ordered from the factory. Does not accommodate field-installed devices.
11. Convenience Outlet:
    a. Powered convenience outlet. (3 Phase Models Only)
       1) Outlet shall be powered from main line power to the rooftop unit.
       2) Outlet shall be powered from line side or load side of disconnect by installing contractor, as required by code. If outlet is powered from load side of disconnect, unit electrical ratings shall be UL certified and rated for additional outlet amperage.
       3) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
       4) Outlet shall include 15 amp GFI receptacles with independent fuse protection.
       5) Voltage required to operate convenience outlet shall be provided by a factory installed step-down transformer.
       6) Outlet shall be accessible from outside the unit.
       7) Outlet shall include a field installed “Wet in Use” cover.
    b. Factory-Installed Non-Powered convenience outlet.
       1) Outlet shall be powered from a separate 115/120v power source.
       2) A transformer shall not be included.
       3) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
       4) Outlet shall include 15 amp GFI receptacles with independent fuse protection.
       5) Outlet shall be accessible from outside the unit.
       6) Outlet shall include a field installed “Wet in Use” cover.
    c. Field-Installed Non-Powered convenience outlet.
       1) Outlet shall be powered from a separate 115/120v power source.
       2) A transformer shall not be included.
       3) Outlet shall be field-installed and internally mounted with easily accessible 115-v female receptacle.
       4) Outlet shall include 20 amp GFI receptacles. This kit provides a flexible installation method which allows code compliance for height requirements of the GFCI outlet from the finished roof surface as well as the capability to relocate the outlet to a more convenient location.
       5) Outlet shall be accessible from outside the unit.
       6) Outlet shall include a field installed “Wet in Use” cover.
12. Flue Discharge Deflector:
    a. Flue discharge deflector shall direct unit exhaust vertically instead of horizontally.
    b. Deflector shall be defined as a “natural draft” device by the National Fuel and Gas (NFG) code.
13. Thru-the-Base Connectors:
    a. Kits shall provide connectors to permit gas and electrical connections to be brought to the unit through the unit basepan.
    b. Minimum of four connection locations per unit.
14. Propeller Power Exhaust:
    a. Power exhaust shall be used in conjunction with an integrated economizer.
    b. Independent modules for vertical or horizontal return configurations shall be available.
    c. Horizontal power exhaust is shall be mounted in return ductwork.
    d. Power exhaust shall be controlled by economizer controller operation. Exhaust fans shall be energized when dampers open past the 0 to 100% adjustable setpoint on the economizer control.

15. Roof Curbs (Vertical):
    a. Full perimeter roof curb with exhaust capability providing separate air streams for energy recovery from the exhaust air without supply air contamination.
    b. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.
    c. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.
16. High Altitude Gas Conversion Kit:
    a. Package shall contain all the necessary hardware and instructions to convert a standard natural gas unit to operate from 2000 to 7000 ft (610 to 2134 m) elevation with natural gas or from 0 to 7000 ft (0 to 2134 m) elevation with liquefied propane.
17. Outdoor Air Enthalpy Sensor:
    a. The outdoor air enthalpy sensor shall be used to provide single enthalpy control. When used in conjunction with a return air enthalpy sensor, the unit will provide differential enthalpy control. The sensor allows the unit to determine if outside air is suitable for free cooling.
18. Return Air Enthalpy Sensor:
    a. The return air enthalpy sensor shall be used in conjunction with an outdoor air enthalpy sensor to provide differential enthalpy control.
19. Indoor Air Quality (CO_2) Sensor:
    a. Shall be able to provide demand ventilation indoor air quality (IAQ) control.
    b. The IAQ sensor shall be available in duct mount, wall mount, or wall mount with LED display. The setpoint shall have adjustment capability.
20. Smoke detectors (factory-installed only):
    a. Shall be a Four-Wire Controller and Detector.
    b. Shall be environmental compensated with differential sensing for reliable, stable, and drift-free sensitivity.
    c. Shall use magnet-activated test/reset sensor switches.
    d. Shall have tool-less connection terminal access.
    e. Shall have a recessed momentary switch for testing and resetting the detector.
    f. Controller shall include:
        1) One set of normally open alarm initiation contacts for connection to an initiating device circuit on a fire alarm control panel.
        2) Two Form-C auxiliary alarm relays for interface with rooftop unit or other equipment.
        3) One Form-C supervision (trouble) relay to control the operation of the Trouble LED on a remote test/reset station.
        4) Capable of direct connection to two individual detector modules.
        5) Can be wired to up to 14 other duct smoke detectors for multiple fan shutdown applications.
21. Winter Start Kit:
    a. Shall contain a bypass device around the low pressure switch.
    b. Shall be required when mechanical cooling is required down to 25°F (–4°C).
    c. Shall not be required to operate on an economizer when below an outdoor ambient of 40°F (4°C).
22. Time Guard:
    a. Shall prevent compressor short-cycling by providing a 5-minute delay (±2 minutes) before restarting a compressor after shutdown for any reason.
    b. One device shall be required per compressor.
23. Hinged Access Panels:
    a. Shall provide easy access through integrated quarter turn latches.
    b. Shall be on major panels of: filter, control box, fan motor, and compressor.
24. Condensate overflow switch:
    a. This sensor and related controller monitors the condensate level in the drain pan and shuts down compression operation when overflow conditions occur. It includes:
        1) Indicator light — solid red (more than 10 seconds on water contact – compressors disabled), blinking red (sensor disconnected).
        2) 10 second delay to break — eliminates nuisance trips from splashing or waves in pan (sensor needs 10 seconds of constant water contact before tripping).
        3) Disables the compressor(s) operation when condensate plug is detected, but still allows fans to run for Economizer.
25. MERV-8 Return Air filters:
    a. Factory option to upgrade standard unit filters to MERV-8 filters.
26. Phase Monitor Control:
    a. Shall monitor the sequence of three phase electrical system to provide a phase reversal protection.
    b. Shall monitor the three phase voltage inputs to provide a phase loss protection for the three phase device.

c. Will work on either a Delta or Wye power connection.

27. Horn/Strobe Annunciator:
    a. Provides an audible/visual signaling device for use with factory-installed option or field installed accessory smoke detectors.
        1) Requires installation of a field-supplied 24-v transformer suitable for 4.2 VA (AC) or 3.0 VA (DC) per horn/strobe accessory.
        2) Requires field-supplied electrical box, North American 1-gang box, 2-in. (51 mm) x 4-in. (102 mm).
        3) Shall have a clear colored lens.

Note about this specification:

This specification is in the "Masterformat" as published by the Construction Specification Institute. Please feel free to copy this specification directly into your building spec.

Cooling Only/Electric Heat Packaged Rooftop

HVAC Guide Specifications

Size Range: **3 to 6 Nominal Tons**

Carrier Model Number: **50FC*04-07**

Part 1 — (23 06 80) Schedules for Decentralized HVAC Equipment

1.01 (23 06 80.13) Decentralized Unitary HVAC Equipment Schedule:

A. (23 06 80.13.A.) Rooftop unit (RTU) schedule:

1. Schedule is per the project specification requirements.

Part 2 — (23 07 16) HVAC equipment insulation

2.01 (23 07 16.13) Decentralized, Rooftop Units:

A. (23 07 16.13.A.) Evaporator fan compartment:

1. Interior cabinet surfaces shall be insulated with a minimum $^1/_2$-in. thick, minimum $1^1/_2$-lb density, flexible fiberglass insulation bonded with a phenolic binder, neoprene coated on the air side.
2. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

B. (23 07 16.13.B.) Electric Heat Compartment:

1. Aluminum foil-faced fiberglass insulation shall be used.
2. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.

Part 3 — (23 09 13) Instrumentation and control devices for HVAC

3.01 (23 09 13.23) Sensors and Transmitters:

A. (23 09 13.23.A.) Thermostats:

1. Thermostat must
   a. energize both "W" and "G" when calling for heat.
   b. have capability to energize 1 or 2 stages of cooling, and 2 different stages of heating.
   c. include capability for occupancy scheduling.

Part 4 — (23 09 23) Direct Digital Control system for HVAC

4.01 (23 09 23.13) Decentralized, Rooftop Units:

A. (23 09 23.13.A.) SystemVu™ intelligent integrated Direct Digital Control (DDC) shall provide:

1. Integrated unit operation for comfort cooling, heating ventilation as well as all monitoring, recording and reporting capabilities. Controller shall also provide diagnostics and alarms of abnormal unit operation through the controller. Controller shall have an intuitive user display and be able to be used in a standalone operation or via building automation system (BAS).
2. Quick Unit Status LEDs of: Run – meaning all systems are go, ALERT – that indicates there is currently a non-critical issue with the unit, like filters need to be replaced and FAULT – that indicates the unit has a critical issue and will possibly shut down.
3. Six large navigation keys for easy access. Navigation keys shall consist of: TEST, BACK, ENTER, and MENU along with UP and DOWN arrows.
4. Full back lit user display with 4 line by 30 character text capabilities. Display menu shall be designed to provide guided major menus and sub menus main menus provided below:
   a. Shutdown Unit
   b. Run Status
   c. Settings
   d. Alerts/Faults
   e. Service
   f. Inputs
   g. Outputs
   h. USB
5. The capability for standalone operation with conventional thermostat/sensor or use with building automation systems (BAS) of Carrier i-Vu®, BACnet and Carrier Comfort Network® (CCN) systems. No special modules or boards are required for these capabilities. Has the capability to work with Equipment Touch™ and System Touch™ devices and ZS Sensors.
6. The ability to read refrigerant pressures at display or via BAS network of; Discharge Pressure and Suction Pressure. The need for traditional refrigerant gages is not required.
7. USB Data Port for flash drive interaction. This will allow the transfer of data for uploads, downloads, perform software upgrades, back-up and restore data and file transfer data such as component number of starts and run hours.
8. Reverse Rotation Protection of compressors if field three phase wiring is misapplied.
9. Provide Service Capabilities of:
   a. Auto run test
   b. Manual run test
   c. Component run hours and starts
   d. Commissioning reports
   e. Data logging
   f. Alarm history

10. Economizer control and diagnostics. Set up economizer operation, receive feedback from actuator. Also meets the most recent California Title 24, ASHRAE 90.1 and IECC Fault Detection and Diagnostic (FDD) requirements.
11. Unit cooling operation down to 40°F (4°C).
12. Controller shall have easy access connections around the controller perimeter area and consist of Mate-N-Lok, terminal block and RJ style modular jack connections.
13. 365 day real time clock, 20 holiday schedules along with occupied and unoccupied scheduling.
14. Auto-Recognition for easy installation and commissioning of devices like economizers, space sensors, etc.
15. A 5°F temperature difference between cooling and heating set points to meet the latest ASHRAE 90.1 Energy Standard.
16. Contain return air sensor, supply air sensor and outdoor air sensor to help monitor and provide data for the unit comfort operation, diagnostic and alarms.
17. Use of Carrier's field accessory hand-held Navigator™ display, Equipment Touch and System Touch devices.
18. Units with the factory-installed Humidi-MiZer® system option are capable of providing multiple modes of improved dehumidification as a variation of the normal cooling cycle.
19. Supply Air Tempering control operates the gas or electric heat to maintain a minimum supply air temperature during conditions where very cold outdoor air causes the supply air temperature to fall below the configured Supply Air Tempering Setpoint. This occurs during periods where DCV is active and increasing the amount of outdoor air or in cases where the system is operating at very low airflow and the calculated economizer position has increased to maintain a constant ventilation rate.
20. Demand limiting in SystemVu™ is achieved through set point expansion. The systems heating and cooling set points are expanded in steps or levels. The degree to which the set points may be expanded is defined by the 6 demand level offsets and the 2 commanded demand limit levels.
21. 3-year limited part warranty.

B. (23 09 23.13.B.) RTU Open Protocol, Direct Digital Controller:
1. Shall be ASHRAE 62 compliant.
2. Shall accept 18 - 30VAC, 50 - 60Hz, and consumer 15VA or less power.
3. Shall have an operating temperature range from –40°F (–40°C) to 130°F (54°C), 10% to 90% RH (non-condensing).
4. Shall include built-in protocol for BACnet[1] (MS/TP and PTP modes), Modbus[2] (RTU and ASCII), Johnson N2 and LonWorks[3]. LonWorks Echelon processor required for all Lon applications shall be contained in separate communication board.
5. Shall allow access of up to 62 network variables (SNVT). Shall be compatible with all open controllers.
6. Baud rate controller shall be selectable using a dipswitch.
7. Shall have an LED display independently showing the status of serial communication, running, errors, power, all digital outputs, and all analog inputs.
8. Shall accept the following inputs: space temperature, setpoint adjustment, outdoor air temperature, indoor air quality, outdoor air quality, compressor lock-out, fire shutdown, enthalpy switch, and fan status/filter status/humidity/remote occupancy.
9. Shall provide the following outputs: economizer, fan, cooling stage 1, cooling stage 2, heat stage 1, heat stage 2, exhaust, reversing valve/high fan speed.
10. Shall have built-in surge protection circuitry through solid-state polyswitches. Polyswitches shall be used on incoming power and network connections. Polyswitches will return to normal when the "trip" condition clears.
11. Shall have a battery back-up capable of a minimum of 10,000 hours of data and time clock retention during power outages.
12. Shall have built-in support for Carrier technician tool.
13. Shall include an RS-485 protocol communication port, an access port for connection of either a computer or a Carrier technician tool, an RS-485 port for network communication to intelligent space sensors and displays, and a port to connect an optional LonWorks communications card.
14. Software upgrades will be accomplished by either local or remote download. No software upgrades through chip replacements are allowed.

Part 5 — (23 09 33) Electric and Electronic Control System for HVAC

5.01 (23 09 33.13) Decentralized, Rooftop Units:

A. (23 09 33.13.A.) General:
1. Shall be complete with self-contained low-voltage control circuit protected by a resettable

1. BACnet is a registered trademark of ASHRAE (American Society of Heating, Refrigerating and Air-Conditioning Engineers).
2. Modbus is a registered trademark of Schneider Electric.
3. LonWorks is a registered trademark of Echelon Corporation.

circuit breaker on the 24–v transformer side. Transformer shall have 75VA capability.

2. Shall utilize color-coded wiring.
3. Shall include a Unit Control Board to conveniently and safely provide connection points for vital control functions such as: smoke detectors, phase monitor, economizer, thermostat, DDC control options, and low and high pressure switches. Controller shall also provide an intuitive means to adjust the indoor fan speed through a simple switch and pot adjustment design.
4. Unit shall include a minimum of one 8-pin screw terminal connection board for connection of control wiring.

B. (23 09 33.13.B.) Safeties:

1. Compressor over-temperature, over-current. High internal pressure differential.
2. Low pressure switch.
   a. Low pressure switch shall use different color wire than the high pressure switch. The purpose is to assist the installer and service technician to correctly wire and or troubleshoot the rooftop unit.
3. High pressure switch.
   a. High pressure switch shall use different color wire than the low pressure switch. The purpose is to assist the installer and service technician to correctly wire and or troubleshoot the rooftop unit.
4. Automatic reset, motor thermal overload protector.

Part 6 — (23 09 93) Sequence of Operations for HVAC Controls

6.01 (23 09 93.13) Decentralized, Rooftop Units:

A. (23 09 93.13.A.) INSERT SEQUENCE OF OPERATION

Part 7 — (23 40 13) Panel Air Filters

7.01 (23 40 13.13) Decentralized, Rooftop Units:

A. (23 40 13.13.A.) Standard filter section:

1. Shall consist of factory installed, low velocity, disposable 2-in. thick fiberglass filters of commercially available sizes.
2. Unit shall use only one filter size. Multiple sizes are not acceptable.
3. Filters shall be accessible through an access panel with “no-tool” removal as described in the unit cabinet section of this specification (23 81 19.13.G).

Part 8 — (23 81 19) Self-Contained Air Conditioners

8.01 (23 81 19.13) Small-Capacity Self-Contained Air Conditioners:

A. (23 81 19.13.A.) General:

1. Outdoor, rooftop mounted, electrically controlled, heating and cooling unit utilizing a fully hermetic scroll compressor(s) for cooling duty and optional electric heat for heating duty.
2. Factory assembled, single-piece heating and cooling rooftop unit. Contained within the unit enclosure shall be all factory wiring, piping, controls, and special features required prior to field start-up.
3. Unit shall use Puron® (R-410A) refrigerant.
4. Unit shall be installed in accordance with the manufacturer’s instructions.
5. Unit must be selected and installed in compliance with local, state, and federal codes.

B. (23 81 19.13.B.) Quality Assurance:

1. Unit meets ASHRAE 90.1 minimum efficiency requirements.
2. Unit shall be rated in accordance with AHRI Standards 210/240 (04-06 sizes) or 340/360 (07 size).
3. Unit shall be designed to conform to ASHRAE 15.
4. Unit shall be UL-tested and certified in accordance with ANSI Z21.47 Standards and UL-listed and certified under Canadian standards as a total package for safety requirements.
5. Insulation and adhesive shall meet NFPA 90A requirements for flame spread and smoke generation.
6. Unit casing shall be capable of withstanding 500 hour salt spray exposure per ASTM B117 (scribed specimen).
7. Unit shall be designed in accordance with ISO 9001, and shall be manufactured in a facility registered by ISO 9001:2015.
8. Roof curb shall be designed to conform to NRCA Standards.
9. Unit shall be subjected to a completely automated run test on the assembly line. The data for each unit will be stored at the factory, and must be available upon request.
10. Unit shall be designed in accordance with UL Standard 1995, including tested to withstand rain.
11. Unit shall be constructed to prevent intrusion of snow and tested to prevent snow intrusion into the control box up to 40 mph.
12. Unit shake tested to assurance level 1, ASTM D4169 to ensure shipping reliability.

C. (23 81 19.13.C.) Delivery, Storage, and Handling:
   1. Unit shall be stored and handled per manufacturer's recommendations.
   2. Lifted by crane requires either shipping top panel or spreader bars.
   3. Unit shall only be stored or positioned in the upright position.

D. (23 81 19.13.D.) Project Conditions:
   1. As specified in the contract.

E. (23 81 19.13.E.) Operating Characteristics:
   1. Unit shall be capable of starting and running at 115°F (46°C) ambient outdoor temperature, meeting maximum load criteria of AHRI Standard 210/240 or 340/360 at ±10% voltage.
   2. Compressor with standard controls shall be capable of operation down to 40°F (4°C), ambient outdoor temperatures. Accessory winter start kit is necessary if mechanically cooling at ambient temperatures down to 25°F (–4°C).
   3. Unit shall discharge supply air vertically or horizontally as shown on contract drawings.
   4. Unit shall be factory configured for vertical supply and return configurations.
   5. Unit shall be field convertible from vertical to horizontal airflow on all models. No special kit required.
   6. Unit shall be capable of mixed operation: vertical supply with horizontal return or horizontal supply with vertical return.

F. (23 81 19.13.F.) Electrical Requirements:
   1. Main power supply voltage, phase, and frequency must match those required by the manufacturer.

G. (23 81 19.13.G.) Unit Cabinet:
   1. Unit cabinet shall be constructed of galvanized steel, and shall be bonderized and coated with a prepainted baked enamel finish on all externally exposed surfaces.
   2. Unit cabinet exterior paint shall be: film thickness, (dry) 0.003-in. minimum, gloss (per ASTM D523, 60°F/16°C): 60, Hardness: H-2H Pencil hardness.
   3. Evaporator fan compartment interior cabinet insulation shall conform to AHRI Standards 210/240 and or 340/360 minimum exterior sweat criteria. Interior surfaces shall be insulated with a minimum $^1/_2$-in. thick, 1 lb density, flexible fiberglass insulation, neoprene coated on the air side. Aluminum foil-faced fiberglass insulation shall be used in the heat compartment.
   4. Base of unit shall have a minimum of four locations for thru-the-base gas and electrical connections (factory-installed or field-installed), standard.
   5. Base Rail:
      a. Unit shall have base rails on a minimum of 2 sides.
      b. Holes shall be provided in the base rails for rigging shackles to facilitate maneuvering and overhead rigging.
      c. Holes shall be provided in the base rail for moving the rooftop by fork truck.
      d. Base rail shall be a minimum of 16 gage thickness.
   6. Condensate pan and connections:
      a. Shall be a sloped condensate drain pan made of a corrosion resistant material.
      b. Shall comply with ASHRAE Standard 62.
      c. Shall use a $^3/_4$-in. 14 NPT drain connection, possible either through the bottom or side of the drain pan. Connection shall be made per manufacturer's recommendations.
   7. Top panel:
      a. Shall be a single piece top panel on all sizes.
   8. Electrical Connections:
      a. All unit power wiring shall enter unit cabinet at a single, factory prepared, knockout location.
      b. Thru-the-base capability.
         1) Standard unit shall have a thru-the-base electrical location(s) using a raised, embossed portion of the unit basepan.
         2) Optional, factory approved, water-tight connection method must be used for thru-the-base electrical connections.
         3) No basepan penetration, other than those authorized by the manufacturer, is permitted.
   9. Component access panels (standard):
      a. Cabinet panels shall be easily removable for servicing.
      b. Unit shall have one factory installed, toolless, removable, filter access panel.
      c. Panels covering control box, indoor fan, indoor fan motor, gas components (where applicable), and compressors shall have molded composite handles.
      d. Handles shall be UV modified, composite. They shall be permanently attached, and recessed into the panel.
      e. Screws on the vertical portion of all removable access panel shall engage into heat resistant, molded composite collars.
      f. Collars shall be removable and easily replaceable using manufacturer recommended parts.

H. (23 81 19.13.H.) Coils:

1. Standard Aluminum Fin-Copper Tube Coils:
   a. Standard evaporator and condenser coils shall have aluminum lanced plate fins mechanically bonded to seamless internally grooved copper tubes with all joints brazed.
   b. Evaporator coils shall be leak tested to 150 psig, pressure tested to 450 psig, and qualified to UL 1995 burst test at 1775 psig.
   c. Condenser coils shall be leak tested to 150 psig, pressure tested to 650 psig, and qualified to UL 1995 burst test at 1980 psig.
2. Optional Pre-coated aluminum-fin condenser coils (3 Phase Models Only):
   a. Shall have a durable epoxy-phenolic coating to provide protection in mildly corrosive coastal environments.
   b. Coating shall be applied to the aluminum fin stock prior to the fin stamping process to create an inert barrier between the aluminum fin and copper tube.
   c. Epoxy-phenolic barrier shall minimize galvanic action between dissimilar metals.
   d. Corrosion durability of fin stock shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90.
   e. Corrosion durability of fin stock shall be confirmed through testing to have no visible corrosion after 48 hour immersion in a room temperature solution of 5% salt, 1% acetic acid.
   f. Fin stock coating shall pass 2000 hours of the following: one week exposure in the prohesion chamber followed by one week of accelerated ultraviolet light testing. Prohesion chamber: the solution shall contain 3.5% sodium chloride and 0.35% ammonium sulfate. The exposure cycle is one hour of salt fog application at ambient followed by one hour drying at 95°F (35°C).
3. Optional Copper-fin evaporator and condenser coils (3 Phase Models Only):
   a. Shall be constructed of copper fins mechanically bonded to copper tubes and copper tube sheets.
   b. Galvanized steel tube sheets shall not be acceptable.
   c. A polymer strip shall prevent coil assembly from contacting the sheet metal coil pan to minimize potential for galvanic corrosion between coil and pan.
4. Optional E-coated aluminum-fin evaporator and condenser coils (3 Phase Models Only):
   a. Shall have a flexible epoxy polymer coating uniformly applied to all coil surface areas without material bridging between fins.
   b. Coating process shall ensure complete coil encapsulation of tubes, fins and headers.
   c. Color shall be high gloss black with gloss per ASTM D523-89.
   d. Uniform dry film thickness from 0.8 to 1.2 mil on all surface areas including fin edges.
   e. Superior hardness characteristics of 2H per ASTM D3363-92A and cross-hatch adhesion of 4B-5B per ASTM D3359-93.
   f. Impact resistance shall be up to 160 in.-lb (ASTM D2794-93).
   g. Humidity and water immersion resistance shall be up to minimum 1000 and 250 hours respectively (ASTM D2247-92 and ASTM D870-92).
   h. Corrosion durability shall be confirmed through testing to be no less than 1000 hours salt spray per ASTM B117-90.

I. (23 81 19.13.I.) Refrigerant Components:

1. Refrigerant circuit shall include the following control, safety, and maintenance features:
   a. Fixed orifice metering system on 04-06 models and TXV on 07 size models shall include a multiple feed distribution system that optimizes coil performance.
   b. Refrigerant filter drier - Solid core design.
   c. Service gage connections on suction and discharge lines.
   d. Pressure gage access through a specially designed access port in the top panel of the unit.
2. There shall be gage line access port in the skin of the rooftop, covered by a black, removable plug.
   a. The plug shall be easy to remove and replace.
   b. When the plug is removed, the gage access port shall enable maintenance personnel to route their pressure gage lines.
   c. This gage access port shall facilitate correct and accurate condenser pressure readings by enabling the reading with the compressor access panel on.
   d. The plug shall be made of a leak proof, UV-resistant, composite material.
3. Compressors:
   a. Unit shall use fully hermetic, scroll compressor for each independent refrigeration circuit.
   b. Compressor motors shall be cooled by refrigerant gas passing through motor windings.
   c. Compressors shall be internally protected from high discharge temperature conditions.

d. Compressors shall be protected from an over-temperature and over-amperage conditions by an internal, motor overload device.

e. Compressor shall be factory mounted on rubber grommets.

f. Compressor motors shall have internal line break thermal, current overload and high pressure differential protection.

g. Crankcase heaters shall not be required for normal operating range, unless required by compressor manufacturer due to refrigerant charge limits.

h. Compressor on 04-06 models shall be of a single stage cooling capacity design and 07 models shall be a two stage cooling capacity design.

J. (23 81 19.13.J.) Filter Section:

1. Filters access is specified in the unit cabinet section of this specification.
2. Filters shall be held in place by a pivoting filter tray, facilitating easy removal and installation.
3. Shall consist of factory installed, low velocity, throw-away 2-in. thick fiberglass filters.
4. Filters shall be standard, commercially available sizes.
5. Only one size filter per unit is allowed.

K. (23 81 19.13.K.) Evaporator Fan and Motor with EcoBlue™ Technology:

1. Direct Drive Evaporator fan motor:
   a. Shall be a ECM motor design.
   b. Shall have permanently lubricated bearings.
   c. Shall have inherent automatic-reset thermal overload protection.
   d. Shall have slow ramp up to speed capabilities.
   e. Shall require no fan/motor belts for operation, adjustments and or initial fan speed set up.
   f. Fan DC voltage set up on Unit Control Board can eliminate the need of removal of blower access door, required on conventional belt drive systems.
   g. Shall be internally protected from electrical phase reversal and loss.
2. Evaporator Fan:
   a. Shall be easily set with dedicated selection switch and adjustment pot on unit control board or through SystemVu™ controller.
   b. On sizes 04-06 single speed indoor fan operation provided and on 07 size model with two stage cooling capacity control, the indoor fan speed is automatically controlled to meet the code-compliant 66% low fan speed and 100% at full fan speed operation.
   c. Blower fan shall be a Vane Axial fan design with 75% less moving parts than a conventional belt drive system.
   d. Shall be constructed of a cast aluminum stator and high impact composite material on rotor and air inlet casing.
   e. Shall be a patented / pending design with a corrosion resistant material and dynamically balanced.
   f. Shall have slow ramp up to speed capabilities to help reduce sound and comfort issues typically associated with single speed belt drive systems.
   g. Shall be a slide out design with two screw removal.
3. Shall include an easily accessible unit Control Board to conveniently and safely provide connection points for vital control functions such as: smoke detectors, phase monitor, gas controller, economizer, thermostat, DDC control options, and low and high pressure switches. Controller shall also provide an intuitive means to adjust the indoor fan speed through a simple switch and pot adjustment design.

L. (23 81 19.13.L.) Condenser Fans and Motors:

1. Condenser fan motors:
   a. Shall be a totally enclosed motor.
   b. Shall use permanently lubricated bearings.
   c. Shall have inherent thermal overload protection with an automatic reset feature.
   d. Shall use a shaft-down design on all sizes.
2. Condenser Fans:
   a. Shall be a direct-driven propeller type fan constructed of high impact composite material.
   b. Shall have high impact composite blades completely formed into one piece without blade fasteners or connectors and shall be dynamically balanced.

M. (23 81 19.13.M.) Special Features Options and Accessories:

1. Integrated EconoMi$er® IV, EconoMi$er2, and EconoMi$er X low leak rate models. (EconoMi$er 2, IV and X are factory-installed on 04-06 models. EconoMi$er 2 and X are factory-installed on 07 models. All are field-installed on all 3 and 1 phase models.)
   a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
   b. Independent modules for vertical or horizontal return configuration shall be available. Vertical return modules shall be available as a factory installed option.

c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.

d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.

e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.

f. Standard leak rate shall be equipped with dampers not to exceed 2% leakage at 1 in. wg pressure differential.

g. Economizer controller on EconoMi$er IV models shall be Honeywell W7212 that provides:
   1) Combined minimum and DCV maximum damper position potentiometers with compressor staging relay.
   2) Functions with solid-state analog enthalpy or dry bulb changeover control sensing.
   3) Contain LED indicates for: when free cooling is available, when module is in DCV mode, when exhaust fan contact is closed.

h. Economizer controller on EconoMi$er X models shall be the Honeywell W7220 that provides:
   1) 2-line LCD interface screen for setup, configuration and troubleshooting.
   2) On-board Fault Detection and Diagnostics (FDD) that senses and alerts when the economizer is not operating properly, per California Title 24, ASHRAE 90.1 and IECC[1].
   3) Sensor failure loss of communication identification.
   4) Automatic sensor detection.
   5) Capabilities for use with multiple-speed or single speed indoor fan systems.
   6) Utilize digital sensors: Dry bulb and Enthalpy.

i. Economizer controller on EconoMi$er 2 models with RTU Open or SystemVu™ controls shall be a 4 to 20mA design controlled directly by the controller. RTU Open and SystemVu meet California Title 24, ASHRAE 90.1 and IECC Fault Detection and Diagnostic (FDD) requirements.

j. Shall be capable of introducing up to 100% outdoor air.

k. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE 90.1 requirements.

l. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.

m. Dry bulb outdoor air temperature sensor shall be provided as standard. Enthalpy sensor is also available on factory installed only. Outdoor air sensor setpoint shall be adjustable and shall range from 40°F to 100°F (4°C to 38°C). Additional sensor options shall be available as accessories.

n. The economizer controller shall also provide control of an accessory power exhaust unit function. Factory set at 100%, with a range of 0% to 100%.

o. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.

p. Dampers shall be completely closed when the unit is in the unoccupied mode.

q. Economizer controller shall accept a 2 to 10 vdc CO_2 sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor air damper to provide ventilation based on the sensor input.

r. Compressor lockout temperature on W7220 control is adjustable from –45°F to 80°F, set at a factory default of 32°F. W7212 control opens at 35°F (2°C) and closes at 50°F (10°C).

s. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.

t. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.

2. Integrated EconoMi$er®2, and EconoMi$er X Ultra Low Leak rate models. (Factory-installed on 3 phase models only. Field-installed on all 3 and 1 phase models.)
   a. Integrated, gear driven opposing modulating blade design type capable of simultaneous economizer and compressor operation.
   b. Independent modules for vertical or horizontal return configuration shall be available. Vertical return modules shall be available as a factory-installed option.
   c. Damper blades shall be galvanized steel with composite gears. Plastic or composite blades on intake or return shall not be acceptable.
   d. Shall include all hardware and controls to provide free cooling with outdoor air when temperature and/or humidity are below setpoints.
   e. Shall be equipped with gear driven dampers for both the outdoor ventilation air and the return air for positive air stream control.

1. IECC is a registered trademark of the International Code Council, Inc.

f. Ultra Low Leak design meets California Title 24 section 140.4 and ASHRAE 90.1 requirements for 4 cfm per sq.ft. on the outside air dampers and 10 cfm per sq. ft. on the return dampers.

g. Economizer controller on EconoMi$er X models shall be the Honeywell W7220 that provides:
   1) 2-line LCD interface screen for setup, configuration and troubleshooting.
   2) On-board Fault Detection and Diagnostics (FDD) that senses and alerts when the economizer is not operating properly, per California Title 24, ASHRAE 90.1 and IECC.
   3) Sensor failure loss of communication identification.
   4) Automatic sensor detection.
   5) Capabilities for use with multiple-speed indoor fan systems.
   6) Utilize digital sensors: Dry bulb and Enthalpy.

h. Economizer controller on EconoMi$er 2 models with RTU Open or SystemVu™ controls shall be a 4-20mA design controlled directly by the controller. RTU Open and SystemVu meet California Title 24, ASHRAE 90.1 and IECC Fault Detection and Diagnostic (FDD) requirements.

i. Shall be capable of introducing up to 100% outdoor air.

j. Shall be equipped with a barometric relief damper capable of relieving up to 100% return air and contain seals that meet ASHRAE 90.1 requirements.

k. Shall be designed to close damper(s) during loss-of-power situations with spring return built into motor.

l. Dry bulb outdoor air temperature sensor shall be provided as standard. Enthalpy sensor is also available on factory installed only. Outdoor air sensor setpoint shall be adjustable and shall range from 40°F to 100°F (4°C to 38°C). Additional sensor options shall be available as accessories.

m. The economizer controller shall also provide control of an accessory power exhaust unit function. Factory set at 100%, with a range of 0% to 100%.

n. The economizer shall maintain minimum airflow into the building during occupied period and provide design ventilation rate for full occupancy.

o. Dampers shall be completely closed when the unit is in the unoccupied mode.

p. Economizer controller shall accept a 2 to 10 vdc CO_2 sensor input for IAQ/DCV control. In this mode, dampers shall modulate the outdoor air damper to provide ventilation based on the sensor input.

q. Compressor lockout temperature on W7220 control is adjustable from –45°F to 80°F, set at a factory default of 32°F. W7212 control opens at 35°F (2°C) and closes at 50°F (10°C).

r. Actuator shall be direct coupled to economizer gear. No linkage arms or control rods shall be acceptable.

s. Economizer controller shall provide indications when in free cooling mode, in the DCV mode, or the exhaust fan contact is closed.

3. Two-Position Damper (Factory-installed on 3 Phase 04-06 Models Only. Field-installed on all 3 and 1 Phase Models)
   a. Damper shall be a Two-Position Damper. Damper travel shall be from the full closed position to the field adjustable %-open setpoint.
   b. Damper shall include adjustable damper travel from 25% to 100% (full open).
   c. Damper shall include single or dual blade, gear driven dampers and actuator motor.
   d. Actuator shall be direct coupled to damper gear. No linkage arms or control rods shall be acceptable.
   e. Damper will admit up to 100% outdoor air for applicable rooftop units.
   f. Damper shall close upon indoor (evaporator) fan shutoff and/or loss of power.
   g. The damper actuator shall plug into the rooftop unit's wiring harness plug. No hard wiring shall be required.
   h. Outside air hood shall include aluminum water entrainment filter.

4. Manual damper (field-installed only):
   a. Manual damper package shall consist of damper, air inlet screen, and rain hood which can be preset to admit up to 25% or 50% outdoor air for year round ventilation.

5. Humidi-MiZer Adaptive Dehumidification System (3 Phase Models Only):
   a. The Humidi-MiZer® Adaptive Dehumidification System shall be factory installed and shall provide greater dehumidification of the occupied space by two modes of dehumidification operations in addition to its normal design cooling mode:
      1) Subcooling mode further sub cools the hot liquid refrigerant leaving the condenser coil when both temperature and humidity in the space are not satisfied.
      2) Hot gas reheat mode shall mix a portion of the hot gas from the discharge of the compressor with the hot liquid refrigerant leaving the condenser coil to create

a two-phase heat transfer in the system, resulting in a neutral leaving air temperature when only humidity in the space is not satisfied.

3) Includes low ambient controller.

6. Low Ambient Control Package:
   a. Controller shall control coil head pressure by condenser fan speed modulation or condenser fan cycling and wind baffles.
   b. Shall consist of solid-state control and condenser coil temperature sensor to maintain condensing temperature between 90°F (32°C) and 110°F (43°C) at outdoor ambient temperatures down to –20°F (–29°C).
7. Condenser Coil Hail Guard Assembly (Factory-installed on 3 Phase Models Only. Field-installed on all 3 and 1 Phase Models.)
   a. Shall protect against damage from hail.
   b. Shall be either hood style or louvered.
8. Unit-Mounted, Non-Fused Disconnect Switch (Available on units with MOCPs of 80 amps or less):
   a. Switch shall be factory installed, internally mounted.
   b. National Electric Code (NEC) and UL approved non-fused switch shall provide unit power shutoff.
   c. Shall be accessible from outside the unit.
   d. Shall provide local shutdown and lockout capability.
   e. Sized only for the unit as ordered from the factory. Does not accommodate field-installed devices.
9. Convenience Outlet:
   a. Powered convenience outlet. (3 Phase Models Only)
      1) Outlet shall be powered from main line power to the rooftop unit.
      2) Outlet shall be powered from line side or load side of disconnect by installing contractor, as required by code. If outlet is powered from load side of disconnect, unit electrical ratings shall be UL certified and rated for additional outlet amperage.
      3) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
      4) Outlet shall include 15 amp GFI receptacles with independent fuse protection.
      5) Voltage required to operate convenience outlet shall be provided by a factory installed step-down transformer.
      6) Outlet shall be accessible from outside the unit.
      7) Outlet shall include a field installed “Wet in Use” cover.
   b. Factory-Installed Non-Powered convenience outlet.
      1) Outlet shall be powered from a separate 115/120v power source.
      2) A transformer shall not be included.
      3) Outlet shall be factory-installed and internally mounted with easily accessible 115-v female receptacle.
      4) Outlet shall include 15 amp GFI receptacles with independent fuse protection.
      5) Outlet shall be accessible from outside the unit.
      6) Outlet shall include a field installed “Wet in Use” cover.
   c. Field-Installed Non-Powered convenience outlet.
      1) Outlet shall be powered from a separate 115/120v power source.
      2) A transformer shall not be included.
      3) Outlet shall be field-installed and internally mounted with easily accessible 115-v female receptacle.
      4) Outlet shall include 20 amp GFI receptacles. This kit provides a flexible installation method which allows code compliance for height requirements of the GFCI outlet from the finished roof surface as well as the capability to relocate the outlet to a more convenient location.
      5) Outlet shall be accessible from outside the unit.
      6) Outlet shall include a field installed “Wet in Use” cover.
10. Thru-the-Base Connectors:
    a. Kits shall provide connectors to permit gas and electrical connections to be brought to the unit through the unit basepan.
    b. Minimum of four connection locations per unit.
11. Propeller Power Exhaust:
    a. Power exhaust shall be used in conjunction with an integrated economizer.
    b. Independent modules for vertical or horizontal return configurations shall be available.
    c. Horizontal power exhaust is shall be mounted in return ductwork.
    d. Power exhaust shall be controlled by economizer controller operation. Exhaust fans shall be energized when dampers open past the 0 to 100% adjustable setpoint on the economizer control.
12. Roof Curbs (Vertical):
    a. Full perimeter roof curb with exhaust capability providing separate air streams for energy recovery from the exhaust air without supply air contamination.

b. Formed galvanized steel with wood nailer strip and shall be capable of supporting entire unit weight.

c. Permits installation and securing of ductwork to curb prior to mounting unit on the curb.

13. Outdoor Air Enthalpy Sensor:
    a. The outdoor air enthalpy sensor shall be used to provide single enthalpy control. When used in conjunction with a return air enthalpy sensor, the unit will provide differential enthalpy control. The sensor allows the unit to determine if outside air is suitable for free cooling.
14. Return Air Enthalpy Sensor:
    a. The return air enthalpy sensor shall be used in conjunction with an outdoor air enthalpy sensor to provide differential enthalpy control.
15. Indoor Air Quality (CO_2) Sensor:
    a. Shall be able to provide demand ventilation indoor air quality (IAQ) control.
    b. The IAQ sensor shall be available in duct mount, wall mount, or wall mount with LED display. The setpoint shall have adjustment capability.
16. Smoke detectors (factory-installed only):
    a. Shall be a four-wire controller and detector.
    b. Shall be environmental compensated with differential sensing for reliable, stable, and drift-free sensitivity.
    c. Shall use magnet-activated test/reset sensor switches.
    d. Shall have tool-less connection terminal access.
    e. Shall have a recessed momentary switch for testing and resetting the detector.
    f. Controller shall include:
        1) One set of normally open alarm initiation contacts for connection to an initiating device circuit on a fire alarm control panel.
        2) Two Form-C auxiliary alarm relays for interface with rooftop unit or other equipment.
        3) One Form-C supervision (trouble) relay to control the operation of the Trouble LED on a remote test/reset station.
        4) Capable of direct connection to two individual detector modules.
        5) Can be wired to up to 14 other duct smoke detectors for multiple fan shutdown applications.
17. Winter Start Kit:
    a. Shall contain a bypass device around the low pressure switch.
    b. Shall be required when mechanical cooling is required down to 25°F (–4°C).
    c. Shall not be required to operate on an economizer when below an outdoor ambient of 40°F (4°C).
18. Time Guard:
    a. Shall prevent compressor short-cycling by providing a 5 minute delay (±2 minutes) before restarting a compressor after shutdown for any reason.
    b. One device shall be required per compressor.
19. Hinged Access Panels:
    a. Shall provide easy access through integrated quarter turn latches.
    b. Shall be on major panels of: filter, control box, fan motor, and compressor.
20. Condensate overflow switch:
    a. This sensor and related controller monitors the condensate level in the drain pan and shuts down compression operation when overflow conditions occur. It includes:
        1) Indicator light — solid red (more than 10 seconds on water contact – compressors disabled), blinking red (sensor disconnected).
        2) 10 second delay to break — eliminates nuisance trips from splashing or waves in pan (sensor needs 10 seconds of constant water contact before tripping).
        3) Disables the compressor(s) operation when condensate plug is detected, but still allows fans to run for Economizer.
21. MERV-8 Return Air filters:
    a. Factory option to upgrade standard unit filters to MERV-8 filters.
22. Phase Monitor Control:
    a. Shall monitor the sequence of three phase electrical system to provide a phase reversal protection.
    b. Shall monitor the three phase voltage inputs to provide a phase loss protection for the three phase device.
    c. Will work on either a Delta or Wye power connection.
23. Horn/Strobe Annunciator:
    a. Provides an audible/visual signaling device for use with factory-installed option or field installed accessory smoke detectors.
        1) Requires installation of a field-supplied 24-v transformer suitable for 4.2 VA (AC) or 3.0 VA (DC) per horn/strobe accessory.
        2) Requires field-supplied electrical box, North American 1-gang box, 2-in. (51 mm) x 4-in. (102 mm).

3) Shall have a clear colored lens.

24. Electric Heat:

a. Heating Section:

1) Heater element open coil resistance wire, nickel-chrome alloy, 0.29 inches inside diameter, strung through ceramic insulators mounted on metal frame. Coil ends are staked and welded to terminal screw slots.

2) Heater assemblies are provided with integral fusing for protection of internal heater circuits not exceeding 48 amps each. Auto reset thermo limit controls, magnetic heater contactors (24 v coil) and terminal block all mounted in electric heater control box (minimum 18 ga galvanized steel) attached to end of heater assembly.

Manufacturer reserves the right to discontinue, or change at any time, specifications or designs without notice and without incurring obligations.

Performance Summary For Untitled1

Project: 22351 06-18-2022
Prepared By: 06:44PM

Part Number:48FCDA05A1A3-0A0A0

ARI SEER:	**14.00**	
Base Unit Dimensions		
Unit Length:	**74.4**	in
Unit Width:	**46.6**	in
Unit Height:	**33.4**	in
Operating Weight		
Base Unit Weight:	**543**	lb
Accessories		
Standard Low Leak Vertical EconoMi$er IV with solid-state controller:	**50**	lb
14-inch Tall Roof Curb:	**115**	lb
Total Operating Weight:	**708**	lb
Unit		
Unit Voltage-Phase-Hertz:	**208-1-60**	
Air Discharge:	**Vertical**	
Fan Drive Type:	**Direct**	
Actual Airflow:	**1600**	CFM
Site Altitude:	**23**	ft
Cooling Performance		
Condenser Entering Air DB:	**99.0**	F
Evaporator Entering Air DB:	**81.8**	F
Evaporator Entering Air WB:	**67.1**	F
Entering Air Enthalpy:	**31.52**	BTU/lb
Evaporator Leaving Air DB:	**60.9**	F
Evaporator Leaving Air WB:	**57.9**	F
Evaporator Leaving Air Enthalpy:	**24.99**	BTU/lb
Gross Cooling Capacity:	**46.99**	MBH
Gross Sensible Capacity:	**36.08**	MBH
Compressor Power Input:	**3.63**	kW
Coil Bypass Factor:	**0.125**	
Mixed Air		
Outdoor Air Airflow:	**150**	CFM
Outdoor Air DB:	**99.0**	F
Outdoor Air WB:	**68.0**	F
Outdoor Air Htg. Temp.:	**34.0**	F
Return Air DB:	**80.0**	F
Return Air WB:	**67.0**	F
Return Air Htg. Temp.:	**70.0**	F
Heating Performance		
Heating Airflow:	**1600**	CFM
Entering Air Temp:	**66.6**	F
Leaving Air Temp:	**97.3**	F
Gas Heating Input Capacity:	**65.0**	MBH
Gas Heating Output Capacity:	**53.0**	MBH
Temperature Rise:	**30.7**	F
AFUE (%):	**81.0**	
Thermal Efficiency (%):	**81.0**	
Supply Fan		
External Static Pressure:	**0.50**	in wg
Options / Accessories Static Pressure		
Economizer:	**0.07**	in wg
Total Application Static (ESP + Unit Opts/Acc.):	**0.57**	in wg
Fan RPM:	**1846**	
Fan Power:	**0.68**	BHP
NOTE:	**Selected IFM RPM Range: 1260 - 1900**	

Electrical Data

Voltage Range: **187 - 253**
Compressor #1 RLA: **19.6**
Compressor #1 LRA: **130**
Indoor Fan Motor Type: **STD**
Indoor Fan Motor FLA: **5**
Combustion Fan Motor FLA (ea): **0.48**
Power Supply MCA: **31**
Power Supply MOCP (Fuse or HACR): **50**
Disconnect Size FLA: **30**
Disconnect Size LRA: **141**
Electrical Convenience Outlet: **None**
Outdoor Fan [Qty / FLA (ea)]: **1 / 1.5**

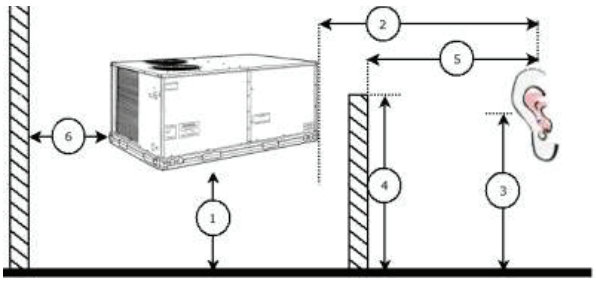
Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	91.5	88.4	85.6
125 Hz	82.3	77.2	84.7
250 Hz	76.0	71.1	80.5
500 Hz	71.3	63.3	76.0
1000 Hz	67.6	65.7	72.4
2000 Hz	64.7	56.9	68.0
4000 Hz	61.8	50.6	62.8
8000 Hz	58.8	44.7	59.3
A-Weighted	75.0	70.1	79.0

Advanced Acoustics



Advanced Accoustics Parameters

1. Unit height above ground: **30.0** ft
2. Horizontal distance from unit to receiver: **50.0** ft
3. Receiver height above ground: **5.7** ft
4. Height of obstruction: **0.0** ft
5. Horizontal distance from obstruction to receiver: **0.0** ft
6. Horizontal distance from unit to obstruction: **0.0** ft

Detailed Acoustics Information

Octave Band Center Freq. Hz	63	125	250	500	1k	2k	4k	8k	Overall
A	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3	89.2 Lw
B	59.4	68.6	71.9	72.8	72.4	69.2	63.8	58.2	78.5 LwA
C	53.2	52.3	48.1	43.6	40.0	35.6	30.4	26.9	56.8 Lp
D	27.0	36.2	39.5	40.4	40.0	36.8	31.4	25.8	46.1 LpA

Legend

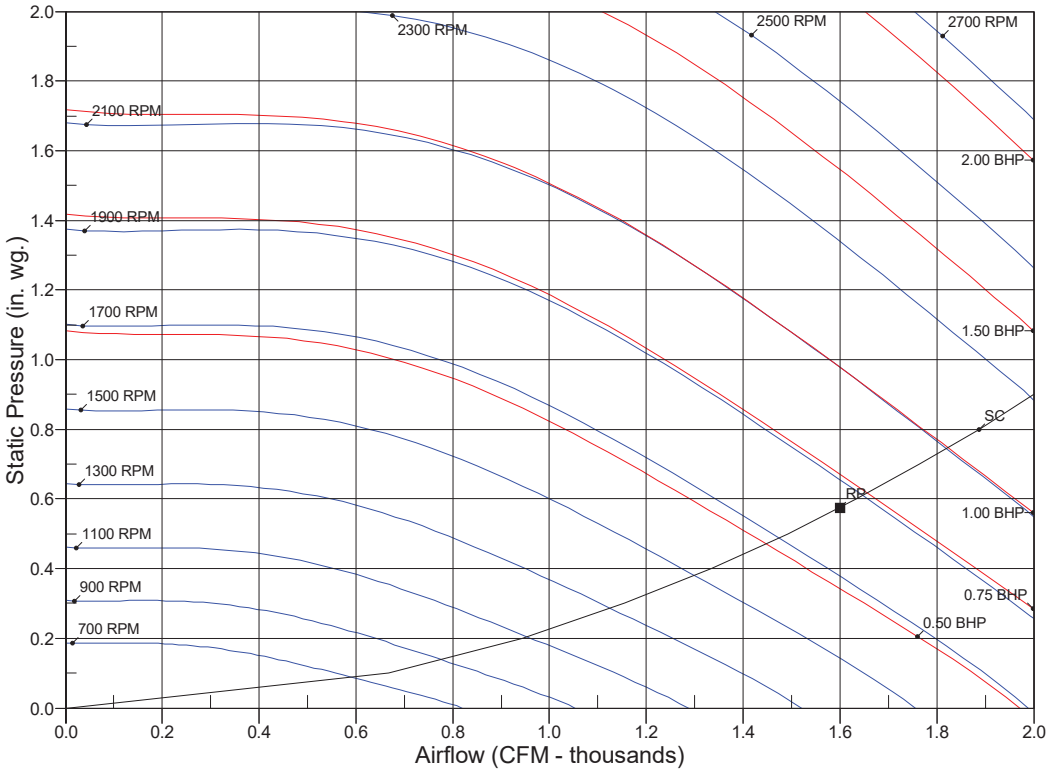
Performance Summary For Untitled1

Project: 22351 06-18-2022
Prepared By: 06:44PM

A Sound Power Levels at Unit's Acoustic Center, Lw
B A-Weighted Sound Power Levels at Unit's Acoustic Center, LwA
C Sound Pressure Levels at Specific Distance from Unit, Lp
D A-Weighted Sound Pressure Levels at Specific Distance from Unit, LpA

Calculation methods used in this program are patterned after the ASHRAE Guide; other ASHRAE Publications and the AHRI Acoustical Standards. While a very significant effort has been made to insure the technical accuracy of this program, it is assumed that the user is knowledgeable in the art of system sound estimation and is aware of the tolerances involved in real world acoustical estimation. This program makes certain assumptions as to the dominant sound sources and sound paths which may not always be appropriate to the real system being estimated. Because of this, no assurances can be offered that this software will always generate an accurate sound prediction from user supplied input data. If in doubt about the estimation of expected sound levels in a space, an Acoustical Engineer or a person with sound prediction expertise should be consulted.

Fan Curve



RPM = 1846 BHP = 0.68 Maximum RPM = 2460 Maximum BHP = 5.00
SC - System Curve RP - Rated Point

Performance Summary For Untitled1

Project: 22351 06-18-2022
Prepared By: 06:31PM

Part Number:48FCDA06A1A3-0A0A0

ARI SEER:	**14.00**	

Base Unit Dimensions

Unit Length:	**74.4**	in
Unit Width:	**46.6**	in
Unit Height:	**33.4**	in

Operating Weight

Base Unit Weight:	**556**	lb
Accessories		
Standard Low Leak Vertical EconoMi$er IV with solid-state controller:	**50**	lb
14-inch Tall Roof Curb:	**115**	lb
Total Operating Weight:	**721**	lb

Unit

Unit Voltage-Phase-Hertz:	**208-1-60**	
Air Discharge:	**Vertical**	
Fan Drive Type:	**Direct**	
Actual Airflow:	**2000**	CFM
Site Altitude:	**23**	ft

Cooling Performance

Condenser Entering Air DB:	**99.0**	F
Evaporator Entering Air DB:	**81.4**	F
Evaporator Entering Air WB:	**67.1**	F
Entering Air Enthalpy:	**31.51**	BTU/lb
Evaporator Leaving Air DB:	**59.8**	F
Evaporator Leaving Air WB:	**58.1**	F
Evaporator Leaving Air Enthalpy:	**25.09**	BTU/lb
Gross Cooling Capacity:	**57.65**	MBH
Gross Sensible Capacity:	**46.60**	MBH
Compressor Power Input:	**4.35**	kW
Coil Bypass Factor:	**0.157**	

Mixed Air

Outdoor Air Airflow:	**150**	CFM
Outdoor Air DB:	**99.0**	F
Outdoor Air WB:	**68.0**	F
Outdoor Air Htg. Temp.:	**34.0**	F
Return Air DB:	**80.0**	F
Return Air WB:	**67.0**	F
Return Air Htg. Temp.:	**70.0**	F

Heating Performance

Heating Airflow:	**2000**	CFM
Entering Air Temp:	**67.3**	F
Leaving Air Temp:	**91.9**	F
Gas Heating Input Capacity:	**65.0**	MBH
Gas Heating Output Capacity:	**53.0**	MBH
Temperature Rise:	**24.6**	F
AFUE (%):	**81.0**	
Thermal Efficiency (%):	**81.0**	

Supply Fan

External Static Pressure:	**0.50**	in wg
Options / Accessories Static Pressure		
Economizer:	**0.12**	in wg
Total Application Static (ESP + Unit Opts/Acc.):	**0.62**	in wg
Fan RPM:	**2141**	
Fan Power:	**1.05**	BHP
NOTE:	**Selected IFM RPM Range: 1478 - 2150**	

Electrical Data

Voltage Range:	**187 - 253**
Compressor #1 RLA:	**24.4**
Compressor #1 LRA:	**144**
Indoor Fan Motor Type:	**STD**
Indoor Fan Motor FLA:	**7.2**
Combustion Fan Motor FLA (ea):	**0.48**
Power Supply MCA:	**40**
Power Supply MOCP (Fuse or HACR):	**60**
Disconnect Size FLA:	**38**
Disconnect Size LRA:	**158**
Electrical Convenience Outlet:	**None**
Outdoor Fan [Qty / FLA (ea)]:	**1 / 1.5**

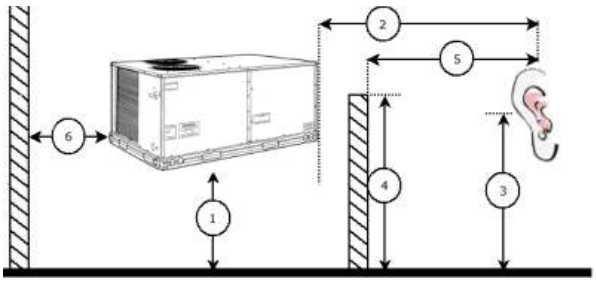
Control Panel SCCR: 5kA RMS at Rated Symmetrical Voltage

Acoustics

Sound Power Levels, db re 10E-12 Watts

	Discharge	Inlet	Outdoor
63 Hz	93.0	89.8	85.6
125 Hz	84.4	80.2	84.7
250 Hz	78.4	72.4	80.5
500 Hz	74.7	67.0	76.0
1000 Hz	71.6	69.0	72.4
2000 Hz	69.1	60.4	68.0
4000 Hz	64.9	53.6	62.8
8000 Hz	60.7	47.7	59.3
A-Weighted	78.1	72.9	79.0

Advanced Acoustics



Advanced Accoustics Parameters

1. Unit height above ground:	**30.0**	ft
2. Horizontal distance from unit to receiver:	**50.0**	ft
3. Receiver height above ground:	**5.7**	ft
4. Height of obstruction:	**0.0**	ft
5. Horizontal distance from obstruction to receiver:	**0.0**	ft
6. Horizontal distance from unit to obstruction:	**0.0**	ft

Detailed Acoustics Information

Octave Band Center Freq. Hz	63	125	250	500	1k	2k	4k	8k	Overall
A	85.6	84.7	80.5	76.0	72.4	68.0	62.8	59.3	89.2 Lw
B	59.4	68.6	71.9	72.8	72.4	69.2	63.8	58.2	78.5 LwA
C	53.2	52.3	48.1	43.6	40.0	35.6	30.4	26.9	56.8 Lp
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Legend

Performance Summary For Untitled1

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Prepared By: 06:31PM

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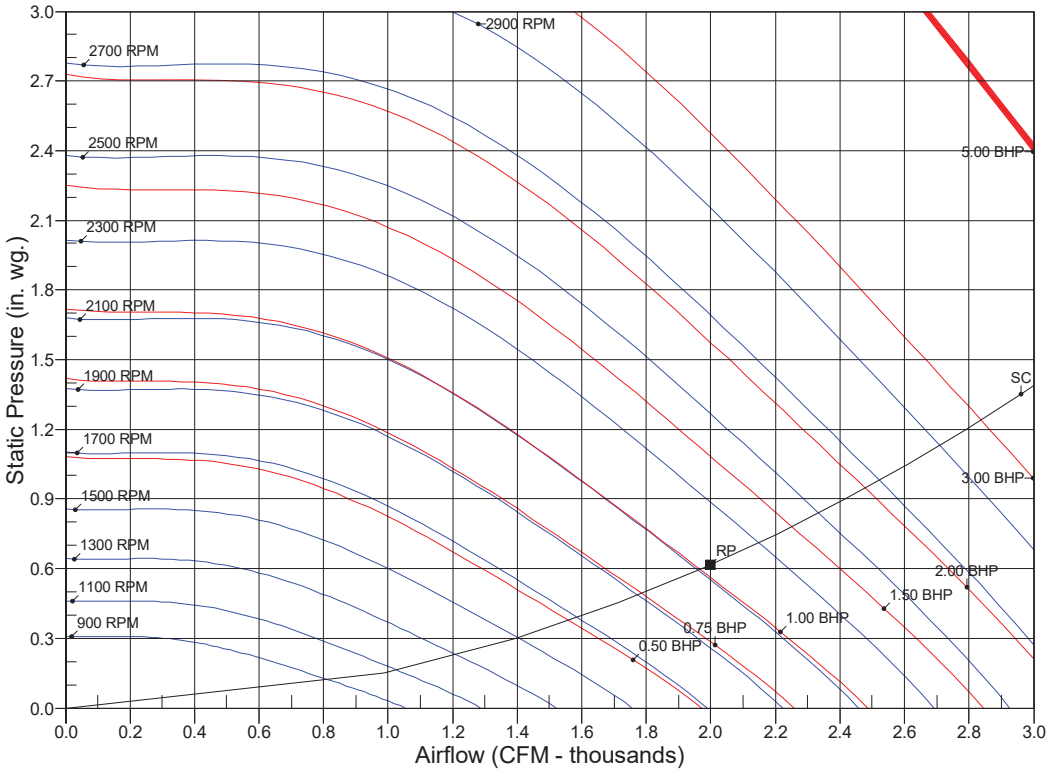

RPM = 2141 BHP = 1.05 Maximum RPM = 2660 Maximum BHP = 5.00
SC - System Curve RP - Rated Point

SECTION 8.1

SPECIFICATION CRITERIA FOR STRESSED MEMBRANE SPRUNG STRUCTURES

(EDC Perks Court Navigation Center)

DOC ID FM 01/13

1. The structure must be a Stressed Membrane Structure measuring 60' ft wide by 75' ft long, measured maximum width by maximum length. Detailed list of required accessories as follows:

1 - El Dorado County Health and Human Services Graphic Logo at Entrance

1 - Framed Opening 10'6" x 8'

2 - Bay(s) of Cable Bracing

2 - Engineered Flat End - 60 ' - Polyurethane Insulated

2 - Insulated Double Personnel Door(s) c/w Hood, High Traffic Panic & Closers (6'0"X7'0")

2 - LED Hood Light(s) 120-277, 50 or 60 Hz c/w Bracket and Photocell

4 - Framed Opening 4'6"x8"

40 - 75 lb. Hanging Brackets - Interior suspension eye-nuts, powder coated or mill finish

- 8" (R-25) blanket of foil backed fiberglass insulation c/w white interior liner membrane
- Conduit Holes Set as per diagram provided by Sprung
- Engineered Stamped Drawings
- Perimeter Flat Bar
- Polyurethane opaque membrane with Daylight Panels (Standard)

2. The entire roof slope of the structure, including the peak, shall have a minimum slope of 26 degrees.

3. No exterior guy ropes or cables shall be used for anchoring the structure.

4. There will be no exposed exterior horizontal purlins.

5. The structure shall be completely clear-span with no interior supports of any description.

6. Any required miscellaneous steel components such as anchor bolts, cable bracing, base assemblies or attachment brackets must be ***zinc plated*** or ***galvanized***.

7. All bolts used shall be ***zinc plated*** or ***galvanized*** with a minimum of Grade 5 specification.

8. All personnel doors and windows must be installed in such a way that the vertical and horizontal tension on the architectural membrane is maintained, at all times.

9. All personnel doors, especially fire exits, must come complete with a protective all weather hood system to shed snow and rain away from the front of doors.

10. The main structural support beams shall be continuous from the ground seal to the peak and manufactured in such a way that no eave will exist.

11. The structure shall be designed to meet the wind loads as outlined CBC 2019.

    A. CBC 2019, 110mph, exposure 'C', Risk Category II.

12. The stressed membrane structure must be designed to shed all snow off the roof. (In accordance with the Alternative Design Section of the building code.)

13. All main structural arches and connecting purlins shall be 100% ALUMINUM utilizing a single I beam configuration and not to exceed *10"* inches in depth.

14. All structural aluminum components must have the following minimum structural and mechanical properties.

Tension			Shear		Bearing
Ultimate	Yield	Elongation	Ultimate	Yield	Ultimate
KSI	KSI	%	KSI	KSI	KSI
38	35	10	23	21	80

15. The architectural membrane must not rest upon any part of the substructure and shall be installed in the aluminum frame and tensioned both vertically and horizontally to prevent wear and abrasion. Horizontal tension shall be maintained mechanically with horizontal purlins/spreaders that require no ongoing maintenance. The membrane shall be tensioned to a predetermined level of 20 pounds per lineal inch (pli) in the horizontal direction and 10 pounds per lineal inch (pli) in the vertical direction creating a tension field within the membrane.

16. All aluminum used in the structure shall carry a pro-rata guarantee of not less than 50 years.

17. The architectural membrane, when assembled and tensioned, shall be absolutely wrinkle free, and shall remain so indefinitely in hot and cold temperatures.

18. The structure shall be modular in design consisting of individual membrane panels which do not exceed 15' in width on the main center modules. (This minimizes future costs of repair and replacement of localized membrane damage and allows future expansion/reduction in reasonable sized modules.)

19. The structure shall be designed so that any section of architectural membrane may be removed or replaced within four hours using a maximum of four workmen.

20. The individual architectural membrane panels on the center modules shall be one continuous section from one side, over the peak and down to the base at the other side and manufactured in such a way that no eave will exist.

    a) In order to provide the introduction of natural light for daytime use, a continuous section of highly translucent white architectural membrane (daylight panel) shall be incorporated into the membrane along the peak of the structure. To minimize internal solar gain in the structure, the balance of the exterior architectural membrane shall be Grey in color and complete with a blackout layer.

b) *(For Polyurethane Coated Membrane*) All exterior architectural membrane on the structure shall come complete with a protective exterior polyurethane top coat, and a 15 year pro-rata guarantee. The membrane will possess the following minimum quality and fire rating specifications as shown on Schedule A attached;

- Blackout design prevents solar gain and manages climate control
- Weighs approximately 20 oz. per square yard
- High strength, rip-stop
- Exceptional fire-retardant capability
- 15-year pro-rata guarantee
- Opaque for maximum longevity and energy efficiency
- Available in white, gray or tan
- Rain Kleen® finish prolongs life of the fabric and is easy to clean

Base Fabric Type (Scrim)	Polyester
Adhesion ASTM D4431	20lbs (lbs/2in)
Finish Weight Method ASTM D3776	20 oz./sq.yd. (+/- 5%)
Surface Protection	Acrylic Top Coat (Rain Kleen)
Tongue Tear (lbs) Method ASTM D2261	W175/F155lbs
Grab Tensile Method ASTM D5034	W450/F345lbs/in
Strip Tensile 1” FED-STD-191A Method 5102	W325/F245lbs/in
Hydrostatic Burst ASTM D751/A	R600+ F600+
Cold Crack FED-STD-191A Method 5874	Pass -40° F

FIRE RATINGS

1. NFPA 701	Flame Spread Index <25
2. ASTM E84	Smoke Development rating <450

3. California State Fire Marshall

4. CAN/ULC-S-109

5. CAN/ULC-S-102

(For Insulation c/w interior liner) The structure shall be supplied with a complete insulation system within all roof and wall sections (except the daylight panel), providing the following minimum specifications:

a) 8" thick fiberglass blanket using formaldehyde free fiberglass insulation.
b) FSK (Foil, scrim, kraft) facing on one side of the insulation blanket to provide both a vapor barrier and to help preserve radiant heat. System to include FSK tape to seal all insulation joints and to seal insulation to structure's supporting members.
c) A white interior liner in a minimum 14oz coated polyester membrane, vertically and horizontally tensioned providing a secondary vapor barrier and clean unwrinkled interior finish to the insulation system.
d) Interior and exterior thermal caps to be installed over the structure's supporting beams to minimize thermal transfer through the supporting member. Each thermal cap c/w neoprene wipers each side to complete thermal break.
e) Peak to grade insulation retention system to ensure insulation will never creep or shift downward under its own weight.

21. Structure Supplier must be an established manufacturer with at least 10 years of experience in the design fabrication and delivery of structures with the same basic specifications as above. Structure supplier is to provide 10 examples of similar structures that have been erected. Contact names and numbers as well as physical address of the 10 sites must be submitted.

22. Structure Supplier is to supply all specialized hand tools required for erection of the structure to be returned to Structure Supplier upon completion of erection.

23. Structure Supplier must supply a Technical Consultant on site for the full duration of the erection of the structure to provide information about structure assembly and erection to ensure structure is erected in accordance with its engineered design. All costs for the consultants' time, travel, meals and accommodation are to be included in the price submission.

24. Upon award of this contract, Structure Supplier is to supply detailed drawings and supporting calculations for the structure stamped by an engineer certified in the State of CA.

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Our durable, precision-engineered structures are the solution of choice for a broad range of industries needing a fast, reliable and cost-effective building solution.

Sprung Instant Structures, Inc. located in Salt Lake City, Utah is a member of the Sprung Group of Companies in business since 1887, which has achieved international recognition by providing shelter solutions for thousands of different applications in over ninety countries throughout the world.

Sprung is the inventor of the stressed membrane structure, engineered to accommodate the world's need for enclosed space quickly and economically.

This innovative building solution utilizes architectural membrane panels placed under high tension within a non-corroding aluminum substructure. Sprung provides an optional superior performing energy efficient Johns Manville formaldehyde free insulation package.

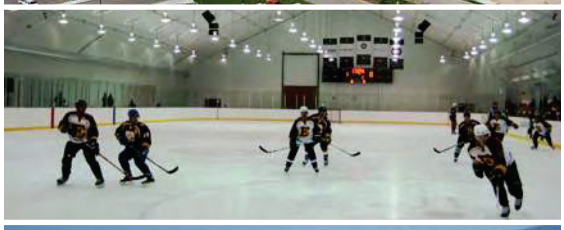
With over 130 years of history directed by four generations of the Sprung family, this innovative structure system is continuously evolving through ongoing research and development programs.

The benefits of Sprung structures include: speed of erection, flexibility of use, customization and unparalleled engineering. Each Sprung structure is manufactured from the highest quality products and materials, and individually tested using strict performance measures. With a specialized high-strength aluminum alloy, our substructure has an unlimited lifespan. Sprung structures are engineered to meet or exceed the requirements of most building codes and standards.

The proven advanced and responsive building solution.

Our corporate and manufacturing facilities are located in Sprung structures. We showcase and enjoy the superior qualities and features that make a Sprung structure a sound business, environmentally-friendly, building choice.

Contact your closest Sprung office for more information on Sprung structures.



Sprung Instant Structures, Inc.
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West Jordan, UT, United States 84081

1 800 528.9899 info@sprung.com www.sprung.com

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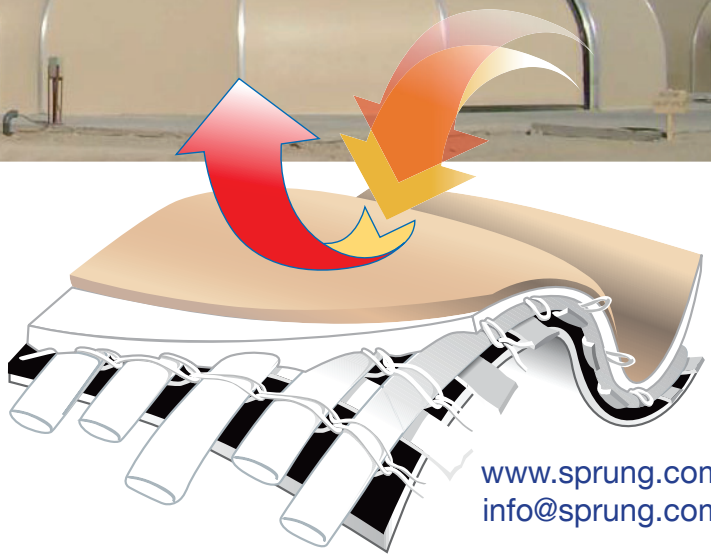

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Our Polyurethane Architectural Membrane Offers Superior Performance

- Blackout design prevents solar gain and manages climate control
- Weighs approximately 20 oz. per square yard
- High strength, rip-stop
- Exceptional fire-retardant capability
- 15-year pro-rata guarantee
- Opaque for maximum longevity and energy efficiency
- Available in white, gray or tan
- Rain Kleen® finish prolongs life of the fabric and is easy to clean

*The selected Pantone color numbers are a visual interpretation of the membrane colors.
The above color chips are not true and accurate representations of the actual membrane color. Please request a membrane sample prior to ordering.

Durability, color choices and ease of cleaning are among the many hallmarks of the architectural membrane of your Sprung structure.

A Faster Way to Build

POLYURETHANE ARCHITECTURAL MEMBRANE

Base Fabric Type (Scrim)	Polyester
Adhesion ASTM D4431	20lbs (lbs/2in)
Finish Weight Method ASTM D3776	20 oz./sq.yd. (+/- 5%)
Surface Protection	Acrylic Top Coat (Rain Kleen)
Tongue Tear (lbs) Method ASTM D2261	W175/F155lbs
Grab Tensile Method ASTM D5034	W450/F345lbs/in
Strip Tensile 1” FED-STD-191A Method 5102	W325/F245lbs/in
Hydrostatic Burst ASTM D751/A	R600+ F600+
Cold Crack FED-STD-191A Method 5874	Pass -40° F

FIRE RATINGS

1. NFPA 701	Flame Spread Index <25
2. ASTM E84	Smoke Development rating <450
3. California State Fire Marshall	
4. CAN/ULC-S-109	
5. CAN/ULC-S-102	

FLAME RETARDANT

Fabric Registration

LICENSE NUMBER: F-079301

Product Marketed by:

HERCULITE PRODUCTS, INC.
P. O. BOX 435
EMIGSVILLE
17318

Issue Date : 04/19/2021
Expiration Date : 06/30/2022

This product meets the minimum requirements of flame resistance established by the California State Fire Marshal for products identified in Section 13115, California Health and Safety Code. The scope of the approved use of this product is provided in the current edition of the CALIFORNIA APPROVED LIST OF FLAME RETARDANT CHEMICALS AND FABRICS, GENERAL AND LIMITED APPLICATIONS CONCERNS published by the California State Fire Marshal.

Issued By Vikkie Raby
Fire Engineering License Manager
Fire Engineering Division

Reviewed and Approved By Patricia Setter
Deputy State Fire Marshal III
Fire Engineering Division

OFFICE OF THE STATE FIRE MARSHAL

Please visit calfire.govmotus.org for more information on Licensing and Permitting with CAL FIRE

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May 4, 2009

Ms. Val Wagman
HERCULITE PRODUCTS, INC.
P.O. Box 435
Emigsville, PA 17318

Reference: Flammability Test Report
Lab Identification No. 9690
Invoice No. 22128 (Attached)

Dear Ms. Wagman:

One (1) sample, identified as **ARCHITENT EXCEL 18, LOT # 42782,** was received and tested in accordance with the California Administrative Code Title 19--Public Safety, Section 1237. Flame Resistance, Small Scale Test. The results are as follows:

Specimen Number	After Flame Time (sec)		Char Length (in)	
	Length	Width	Length	Width
1	0.0	0.0	4.8	4.3
2	0.0	0.0	4.7	4.1
3	0.0	0.0	4.3	4.1
4	0.0	0.0	4.1	3.7
5	0.0	0.0	4.5	3.9
Avg.	0.0	0.0		

The sample submitted, in its original state, **meets** the minimum requirements of the above standard. The char length may not exceed 6.0 inches for any individual specimen and the average afterflame time may not exceed 4.0 seconds in the length or width directions.

If there are any questions or when we can be of further assistance, please let us know.

Sincerely,

Karon S. Matking

KSM/mr
Attachment

OUR LETTERS AND REPORTS ARE FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM THEY ARE ADDRESSED. ANY COMMUNICATION TO OTHERS OR THE USE OF OUR COMPANY NAME MUST RECEIVE PRIOR APPROVAL. OUR TEST RESULTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. SAMPLES NOT DESTROYED IN TESTING ARE RETAINED A MAXIMUM OF THIRTY DAYS. THE LETTERS, REPORTS OR NAME OF DIVERSIFIED TESTING LABORATORIES, INC. MAY NOT BE USED IN ADVERTISING TO THE GENERAL PUBLIC.

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P.O. Box 435
Emigsville, PA 17318

Reference: Flammability Test Report
Lab Identification No. 9690
Invoice No. 22128 (Attached)

Dear Ms. Wagman:

One (1) sample, identified as **ARCHITENT EXCEL 18, LOT # 42782**, was received and tested in accordance with the California Administrative Code Title 19--Public Safety, Section 1237. Flame Resistance, Small Scale Test. **The sample was tested after 72 hours of leaching.** The results are as follows:

Specimen Number	After Flame Time (sec)		Char Length (in)	
	Length	Width	Length	Width
1	3.0	12.0	4.7	4.6
2	0.0	0.0	5.1	4.9
3	0.0	0.0	4.9	4.7
4	0.0	0.0	5.0	4.7
5	3.0	0.0	4.6	4.7
Avg.	1.2	2.4		

The sample submitted, when tested after 72 hours of leaching, **meets** the minimum requirements of the above standard. The char length may not exceed 6.0 inches for any individual specimen and the average afterflame time may not exceed 4.0 seconds in the length or width directions.

If there are any questions or when we can be of further assistance, please let us know.

Sincerely,

Karon S. Matkins

KSM/mr
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May 4, 2009

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P.O. Box 435
Emigsville, PA 17318

Reference: Flammability Test Report
Lab Identification No. 9690
Invoice No. 22128 (Attached)

Dear Ms. Wagman:

One (1) sample, identified as **ARCHITENT EXCEL 18, LOT # 42782,** was received and tested in accordance with the California Administrative Code Title 19--Public Safety, Section 1237. Flame Resistance, Small Scale Test. **The sample was tested after 100 hours of accelerated weathering.** The results are as follows:

Specimen Number	After Flame Time (sec)		Char Length (in)	
	Length	Width	Length	Width
1	0.0	5.0	5.3	4.7
2	5.0	0.0	3.8	4.8
3	0.0	3.0	4.5	4.1
4	0.0	0.0	4.4	4.8
5	0.0	0.0	4.5	4.7
Avg.	1.0	1.6		

The sample submitted, when tested after 100 hours accelerated weathering, **meets** the minimum requirements of the above standard. The char length may not exceed 6.0 inches for any individual specimen and the average afterflame time may not exceed 4.0 seconds in the length or width directions.

If there are any questions or when we can be of further assistance, please let us know.

Sincerely,

Karon S. Matkins

KSM/mr
Attachment

OUR LETTERS AND REPORTS ARE FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM THEY ARE ADDRESSED. ANY COMMUNICATION TO OTHERS OR THE USE OF OUR COMPANY NAME MUST RECEIVE PRIOR APPROVAL. OUR TEST RESULTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. SAMPLES NOT DESTROYED IN TESTING ARE RETAINED A MAXIMUM OF THIRTY DAYS. THE LETTERS, REPORTS OR NAME OF DIVERSIFIED TESTING LABORATORIES, INC. MAY NOT BE USED IN ADVERTISING TO THE GENERAL PUBLIC.

DIVERSIFIED
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"We Test Per Your Request"
336 WEST FRONT STREET
P.O. BOX 4004
BURLINGTON, NORTH CAROLINA 27215
PHONE (336) 227-7710 • FAX (336) 227-1175
www.diversifiedtestinglabs.com

September 5, 2014

Ms. Stephanie Mummert
HERCULITE PRODUCTS, INC.
P.O. Box 435
Emigsville, PA 17318

Reference: Flammability Test Report
Lab Identification No. 11643
Invoice No. 42409 (Attached)

Dear Ms. Mummert:

One (1) sample, identified as **111131 ARCHITENT EXCEL 18 LOT 15601H**, was received and tested in accordance with the National Fire Prevention Association No. 701, "Standard Methods of Fire Tests for Flame Propagation of Textiles and Films, 2010 Edition, (Test 1, Small Scale)".The results are as follows:

Specimen Number	Residual Flame (seconds)	Weight Loss (percent)
1	0.0	2.80
2	0.0	0.93
3	0.0	1.10
4	0.0	0.82
5	0.0	4.31
6	0.0	0.58
7	0.0	1.22
8	0.0	1.03
9	0.0	0.87
10	0.0	1.04
AVG.	0.0	1.47

The fabric sample submitted **meets** the minimum requirements of the above standard. The average percent weight loss cannot exceed 40% and the weight loss of individual specimens cannot exceed mean value plus three standard deviations. The average residual flame cannot exceed 2.0 seconds.

If there are any questions or when we can be of further assistance, please let us know.

Sincerely,

Bobby E. Puett

BEP/mr
Attachment

OUR LETTERS AND REPORTS ARE FOR THE EXCLUSIVE USE OF THE CLIENT TO WHOM THEY ARE ADDRESSED. ANY COMMUNICATION TO OTHERS OR THE USE OF OUR COMPANY NAME MUST RECEIVE PRIOR APPROVAL. OUR TEST RESULTS APPLY ONLY TO THE SAMPLE TESTED AND ARE NOT NECESSARILY INDICATIVE OF THE QUALITIES OF APPARENTLY IDENTICAL OR SIMILAR PRODUCTS. SAMPLES NOT DESTROYED IN TESTING ARE RETAINED A MAXIMUM OF THIRTY DAYS. THE LETTERS, REPORTS OR NAME OF DIVERSIFIED TESTING LABORATORIES, INC. MAY NOT BE USED IN ADVERTISING TO THE GENERAL PUBLIC.

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May 4, 2009

Ms. Val Wagman
HERCULITE PRODUCTS, INC.
P.O. Box 435
Emigsville, PA 17318

Reference: Flammability Test Report
Lab Identification No. 9690
Invoice No. 22128 (Attached)

Dear Ms. Wagman:

One (1) sample, identified as **ARCHITENT EXCEL 18, LOT # 42782,** was received and tested in accordance with the National Fire Prevention Association No. 701, "Flame Propagation of Textiles and Films, 2004 Edition, (Test 2, Large Scale)". The results are as follows:

Specimen Number		Afterflame (seconds)	Residual Flame (seconds)	Char Length (inches)
Single	1	0.0	0.0	13.0
Flat	2	0.0	0.0	12.0
Specimen	3	0.0	0.0	9.0
	4	0.0	0.0	10.0
	5	0.0	0.0	10.0
	6	0.0	0.0	11.0
	7	0.0	0.0	12.0
	8	0.0	0.0	10.0
	9	0.0	0.0	9.0
	10	0.0	0.0	12.0

The sample submitted **meets** the minimum requirements of the above standard. The length of char on the individual single flat specimens shall not exceed 17.1 inches. Additionally, no specimen shall continue flaming for more than two (2) seconds after the test flame is removed and no residues shall fall to the floor of the test chamber and continue flaming for more than two (2) seconds at any time during the test.

If there are any questions or when we can be of further assistance, please let us know.

Sincerely,

Karon S. Matkins

KSM/mr
Attachment

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September 5, 2014

Ms. Stephanie Mummert
HERCULITE PRODUCTS, INC.
P.O. Box 435
Emigsville, PA 17318

Reference: Flammability Test Report
Lab Identification No. 11643
Invoice No. 42409 (Attached)

Dear Ms. Mummert:

One (1) sample, identified as **111131 ARCHITENT EXCEL 18 LOT 15601H**, was received and tested in accordance with the National Fire Prevention Association No. 701, "Standard Methods of Fire Tests for Flame Propagation of Textiles and Films, 2010 Edition, (Test 2, Large Scale)". The results are as follows:

Specimen Number		After Flame (seconds)	Residual Flame (seconds)	Char Length (inches)
Folds	1	0.0	0.0	15.5
	2	0.0	0.0	16.5
	3	0.0	0.0	17.0
	4	0.0	0.0	18.0

The sample submitted **meets** the minimum requirements of the above standard. The length of char on the individual folded specimens shall not exceed 41.3 inches. Additionally, no specimen shall continue flaming for more than two (2) seconds after the test flame is removed and no residues shall fall to the floor of the test chamber and continue flaming for more than two (2) seconds at any time during the test.

If there are any questions or when we can be of further assistance, please let us know.

Sincerely,

Bobby E. Puett

BEP/mr
Attachment

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HARDWOOD PLYWOOD & VENEER ASSOCIATION LABORATORY AND TESTING SERVICE
1825 Michael Faraday Drive, Reston, VA 20190 703-435-2900 FAX 703-435-2537

Report On
Surface Burning Characteristics
Determined By
ASTM E 84 Twenty-Five Foot
Tunnel Furnace Test Method

PREPARED FOR:
Herculite Products, Inc.
Emigsville, PA

TEST NUMBER T-13394

MATERIAL TESTED:
Architent Excel 18

DATE OF ISSUE 6/16/2010

I. SCOPE

This report contains the reference to the test method, purpose, test procedure, rounding procedures, preparation and conditioning of specimens, description of materials, test and post test observation data, and test results.

II. TEST METHOD

The test was conducted in accordance with ASTM E 84, "Standard Test Method for Surface Burning Characteristics of Building Materials." The 25-foot tunnel method is also described by NFPA 255 and UL 723.

III. PURPOSE

The purpose of the test is to determine the relative performance of the test material under standardized fire exposure. Results are given for Flame Spread and Smoke Developed Index. The values obtained from burning the test material represent a comparison with that of 1/4" inorganic reinforced cement board expressed as zero and red oak flooring expressed as 100.

The flame spread results of 25-foot tunnel tests are frequently used by building code officials and regulatory agencies in the acceptance of interior finish material for various applications. The most widely accepted classification system is epitomized by the National Fire Protection Association Life Safety Code, NFPA 101:

Class A*	0 - 25	flame spread	0-450 smoke developed
Class B*	26 - 75	flame spread	0-450 smoke developed
Class C*	76 - 200	flame spread	0-450 smoke developed

*Class A, B and C correspond to I, II and III, respectively, in other codes such as UBC and BOCA.

This flame spread classification system is based on the premise that the higher the flame spread numbers, the greater the fire spread potential. The actual relationship between the numbers developed under this test and life safety from fire has not been adequately established.

IV. TEST PROCEDURE NOTES

The furnace was preheated to a minimum of 150°F as measured by an 18 AWG thermocouple embedded in cement 1/8" below the floor surface of the chamber, 23-1/4' from the centerline of the ignition burners. The furnace was then cooled to 105°F (± 5°F) as measured by a thermocouple embedded 1/8" below the floor surface of the test chamber 13' from the fire end.

Prior 10-minute tests with 1/4" inorganic reinforced cement board provided the zero reference for flame spread. Periodic 10-minute tests with unfinished select grade red oak flooring provided for the 100 reference for flame spread and smoke developed as noted in Section III.

A. Flame Spread

The flame spread distance is observed and recorded at least every 15 seconds or every 2 feet of progression. The peak distance is noted at the time of occurrence. The flame spread distance is plotted over time. The total area under the flame spread distance-time curve is determined; flame front recessions are ignored. The flame spread is then calculated as a function of the area under the curve relative to the standard red oak curve area. The value for flame spread classification for the tested material may be compared with that of inorganic reinforced cement board and select grade red oak flooring.

B. Smoke Developed

The smoke developed during the test is determined by the reduction in output of a photoelectric cell. A light beam vertically orientated across the furnace outlet duct is attenuated by the smoke passing through the duct. The output of the photoelectric cell is related to the obscuration of the light source through the duct caused by the smoke. A curve is developed by plotting photoelectric cell output against time. The value of smoke developed is derived by calculating the net area under the curve for the test material and comparing this area with the net area under the curve for unfinished select grade 23/32" red oak flooring.

V. FLAME SPREAD AND SMOKE DEVELOPED ROUNDING PROCEDURES

Single test calculated flame spread and smoke developed values are rounded to the nearest multiple of 5 and reported as the Flame Spread or Smoke Developed Index. Actual test values are available on request.

For multiple tests, the individual calculated flame spread and smoke developed values are recorded, averaged, and the results rounded to the nearest multiple of 5. The averaged, rounded number is reported as the Flame Spread or Smoke Developed Index.

VI. PREPARATION AND CONDITIONING OF TEST SAMPLES

Three or four sections are generally used in the preparation of a complete test specimen which is 20-1/2" wide and 24' long. Materials 8' in length may be tested by using three sections 20-1/2" wide by 8' long for a total specimen length of 24'. A 14" length of uncoated 16 gauge steel sheet is used to make up the remainder of the test specimen; it is placed at the fire end of the test chamber. Prior to testing, three 8' long sections of 1/4" inorganic reinforced cement board are placed on the back side of the specimens to protect the furnace lid assembly. Test specimens are conditioned at a controlled temperature of 73.4°F (± 5°F) and a controlled relative humidity of 50 ± 5 percent.

T/BP:6/2004

VII: MATERIAL TESTED

1)	Manufacturer:	Herculite Products, Inc. Emigsville PA
2)	Burn Number:	1
3)	Average Thickness(in.):	0.021
4)	Average Weight (lbs./sq.ft.):	0.166
5)	Average Groove Depth (in.):	
6)	Product Description:	Architent Excel 18 Lot #43724
7)	Color:	White
8)	Surface:	Face Side Exposed
9)	Sample Selection:	Manufacturer
10)	Date of Selection:	5/18/2010
11)	Material Description By:	Manufacturer
12)	Method of Mounting:	Supported with 1/4" diameter steel rods spaced 24 inches on center and 2" hexagonal wire mesh
13)	Sample Conditioning:	28

VIII: TEST CONDITIONS AND DATA

1)	Specimen Preheat Time (min.)	2:00
2)	Tunnel Brick Temp (deg. F):	103
3)	Ignition Time (seconds):	14
4)	Time to End of Tunnel or Flamefront Distance:	2' @ 1:15
5)	Time-Distance Curve Area (min./ft.):	18.6
6)	Fuel and Temperature	
	a) Fuel (cu.ft./min.):	5.776
	b) Max. Vent End Temp. (deg.F):	528
	c) Time to Max. Temp (min.):	9:02
7)	After Flaming:	No

IX: TEST RESULTS

Test results calculated on the basis of the area under the curves of flame spread distance and smoke developed versus time are provided in the table below for calibration materials and for:

Architent Excel 18

Material Description	Flame Spread Index	Smoke Developed Index
High Density Inorganic Reinforced Cement Board	0	0
Red Oak Flooring	100	100
T-13394	10	400

Observations:

Burned through to 10'.

Remarks:

The sample consisted of 1 piece, 24', laid out on top of rods and wire.

Conclusions:

Meets Class A, Flame Spread Index 25 or less and Smoke Developed Index 450 or less.

REPORT PREPARED BY:

Thomas Wilson

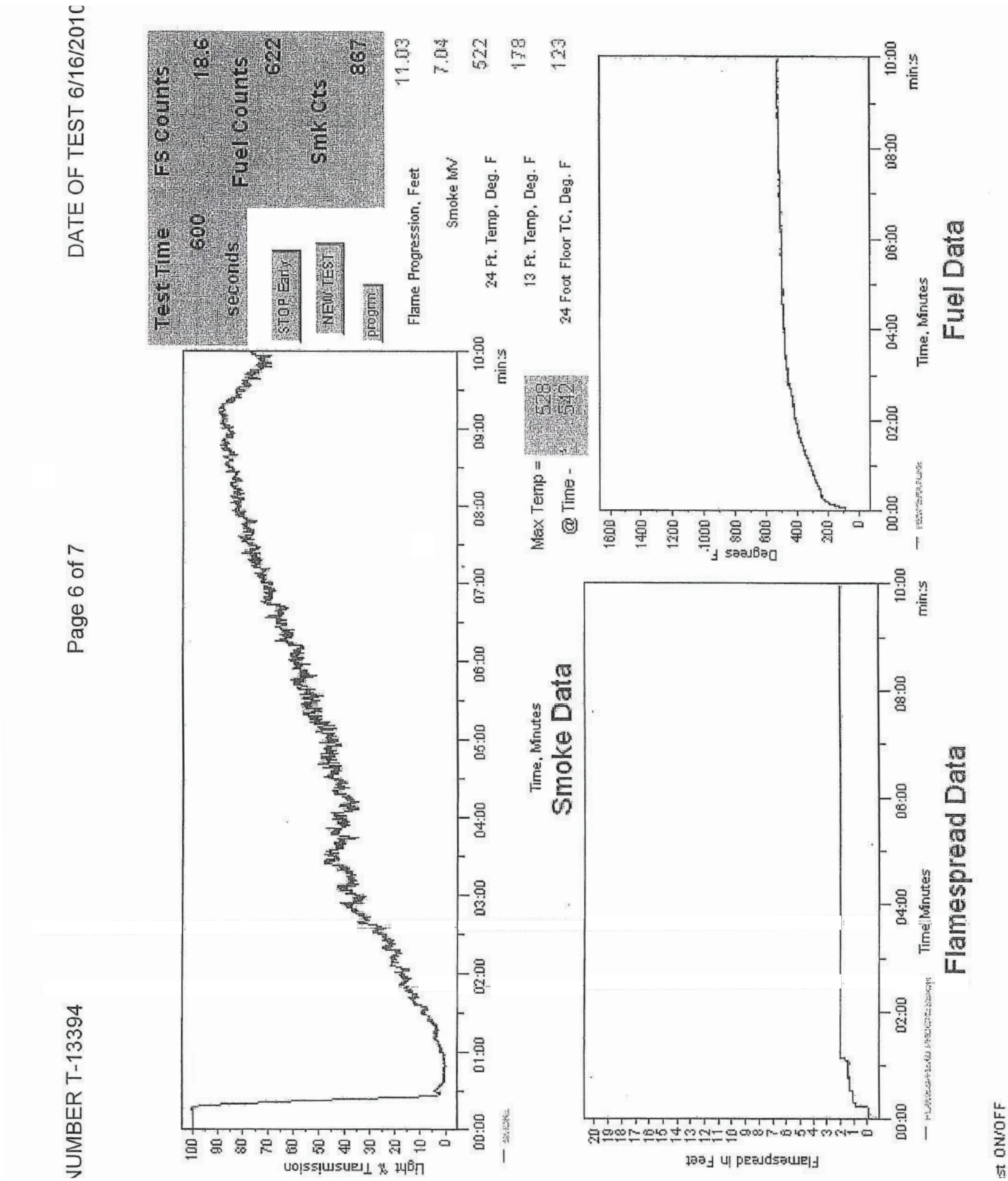
Senior Fire Technologist

REPORT REVIEWED BY:

Brian Sause

Director of Testing, Certification, and Standards

Conformance to the test standard is verified by a registered professional engineer. This is a factual report of the results obtained from laboratory tests of sample products. The results may be applied only to the products tested and should not be construed as applicable to other similar products of the manufacturer. The HPVA does not verify the description of materials and products when the description is provided by the client. The report is not a recommendation or a disapprobation by the Hardwood Plywood and Veneer Association of the material or product tested. While this report may be used for obtaining product acceptance; it may not be used in advertising.


NUMBER T-13394
Page 6 of 7
DATE OF TEST 6/16/2010
Test Time
600
seconds
FS Counts
18.6
Fuel Counts
622
Smk Cts
867
STOP Early
NEW TEST
progrm
Flame Progression, Feet 11.03
Smoke MV 7.04
24 Ft. Temp, Deg. F 522
13 Ft. Temp, Deg. F 178
24 Foot Floor TC, Deg. F 123
Max Temp = 528
@ Time - 542
Light % Transmission
Time, Minutes
min:s
Smoke Data
Degrees F
Fuel Data
Flamespread in Feet
Flamespread Data
st ON/OFF

LABORATORY ACCREDITATION

HPVA is a recognized ASTM E 84 testing laboratory by the following building code organizations under the Council of American Building Officials Report No. NER-TL329 and ICBO Evaluation Service Report No. TL 224.

International Conference of Building Officials
Building Officials and Code Administrators, International
Southern Building Code Congress International, Inc.

HPVA FLAME SPREAD PROPERTY VERIFICATION PROGRAM

The Hardwood Plywood & Veneer Association provides a product property verification program for flame spread properties. This program is based on the selection and testing of panels within a given marketing line on the basis of that combination of factors that theoretically should give the highest flame spread values. Such factors as panel thickness, specific gravity, color of stain, type of lamination, surface texture, and product mix are taken into consideration in the selection of flame spread samples.

While it is standard procedure to include smoke developed values in test reports, the HPVA label identifies only the flame spread class.

The HPVA label is evidence that the marketing line has been tested and inspected in accordance with the HPVA Flame Spread Inspection and Verification Program Procedures.

The HPVA label displayed below indicates conformance of the tested samples to the Type II glue bond requirements as set forth in ANSI/HPVA HP-1-2004 Standard For Hardwood And Decorative Plywood, and conformance to Flame Spread Class C (200 or less) as determined by the test procedures described in ASTM E 84. Depending on the type of product, the label may also include other information such as structural and formaldehyde emission ratings.

HARDWOOD PLYWOOD & VENEER ASSOCIATION		
BOND LINE TYPE II ANSI/HPVA HP-1-2004	HARDWOOD PLYWOOD AND VENEER ASSOCIATION hpva ® MILL 00 SPECIALTY GRADE	FLAME SPREAD 200 OR LESS CLASS C ASTM E 84 SIMULATED DECORATIVE FINISH ON PLYWOOD

Exova
2395 Speakman Dr.
Mississauga
Ontario
Canada
L5K 1B3

T: +1 (905) 822-4111
F: +1 (905) 823-1446
E: sales@exova.com
W: www.exova.com

Testing. calibrating. advising

CAN/ULC-S102 Surface Burning Characteristics of "Architent Excel 18" Material

A Report To:	**Herculite Products** Aberdeen Road Emigsville, PA 17318 USA
Phone:	(717) 764-1192
E-mail:	smummert@herculite.com
Attention:	Stephanie Mummert
Submitted by:	Exova Warringtonfire North America
Report No.	14-002-543(B) 6 Pages
Date:	September 26, 2014

ACCREDITATION To ISO/IEC 17025 for a defined Scope of Testing by the International Accreditation Service

SPECIFICATIONS OF ORDER

Determine the Flame Spread and Smoke Developed Classifications based upon triplicate testing conducted in accordance with CAN/ULC-S102-10, as per Herculite Products reference Purchase Order No. 3051 and Exova Warringtonfire North America Quotation No. 14-002-304463 accepted August 26, 2014.

SAMPLE IDENTIFICATION (Exova sample identification number 14-002-S0543)

Reinforced fabric material, approximately 0.6 mm in thickness, described as "111131 Lot 15601H", and identified as "Architent Excel 18"

TEST PROCEDURE

The method, designated as CAN/ULC-S102-10, "Standard Method of Test for Surface Burning Characteristics of Building Materials and Assemblies", is designed to determine the relative surface burning characteristics of materials under specific test conditions. Results of less than three identical specimens are expressed in terms of Flame Spread Value (FSV) and Smoke Developed Value (SDV). Results of three or more replicate tests on identical samples produce average values expressed as Flame Spread Rating (FSR) and Smoke Developed Classification (SDC).

Although the procedure is applicable to materials, products and assemblies used in building construction for development of comparative surface spread of flame data, the test results may not reflect the relative surface burning characteristics of tested materials under all building fire conditions.

SAMPLE PREPARATION

The test specimen consisted of one continuous section of material approximately 533 mm in width by 7615 mm in length. Prior to testing, the specimens were conditioned to constant weight at a temperature of 23 ± 3°C and a relative humidity of 50 ± 5%. During testing, each specimen was supported over its entire length by 50 mm hexagonal wire mesh and was further supported across its width by 6 mm steel rods spaced nominally at 610 mm intervals. The beige surface was exposed to the test flame.

The testing was performed on: Test #1: 2014-09-25 Test #2: 2014-09-25 Test #3: 2014-09-25

SUMMARY OF TEST PROCEDURE

The tunnel is preheated to 85°C, as measured by the backwall-embedded thermocouple located 7090 mm downstream of the burner ports, and allowed to cool to 40°C, as measured by the backwall-embedded thermocouple located 4000 mm from the burners. At this time the tunnel lid is raised and the test sample is placed along the ledges of the tunnel so as to form a continuous ceiling 7315 mm long, 305 mm above the floor. The lid is then lowered into place.

SUMMARY OF TEST PROCEDURE (continued)

Upon ignition of the gas burners, the flame spread distance is observed and recorded every second. Flame spread distance versus time is plotted. Calculations ignore all flame front recessions and the Flame Spread Values (FSV) are determined by calculating the total area under the curve for each test sample. If the total area under the curve (AT) is less than or equal to 29.7 m·min, FSV = 1.85·AT; if greater, FSV = 1640/(59.4-AT).

Smoke Developed Values (SDV) are determined by comparing the area under the obscuration curve for each test sample to that of inorganic reinforced cement board and red oak, established as 0 and 100, respectively. Each Smoke Developed Value is determined by dividing the total area under the obscuration curve by that of red oak and multiplying by 100.

TEST RESULTS

SAMPLE		Flame Spread Value (FSV)	Smoke Developed Value (SDV)
"Architent Excel 18"	Test #1	16	115
	Test #2	22	153
	Test #3	22	201
	Average:	20	156

Rounded Average Flame Spread Rating (FSR): **20**

Rounded Average Smoke Developed Classification (SDC): **155**

Observations of Burning Characteristics

- The specimens ignited approximately 12 to 13 seconds after exposure to the test flame.
- The flames fronts propagated to maximum distances of 0.9, 1.2 and 1.2 meters at approximately 28, 33, and 23 seconds into each respective test.

Note: This is an electronic copy of the report. Signatures are on file with the original report.

Robert A. Carleton,
Technologist.

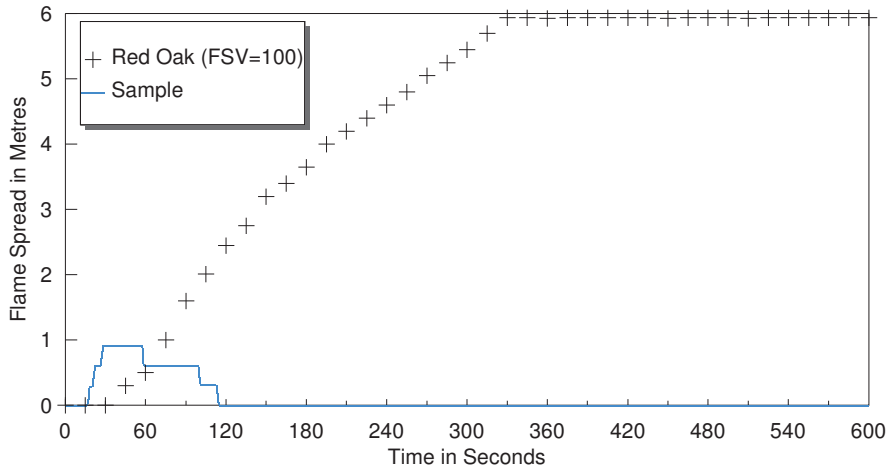
Ian Smith,
Technical Manager.

Note: This report and service are covered under Exova Canada Inc. Standard Terms and Conditions of Contract which may be found on the Exova website (www.exova.com), or by calling 1-866-263-9268.

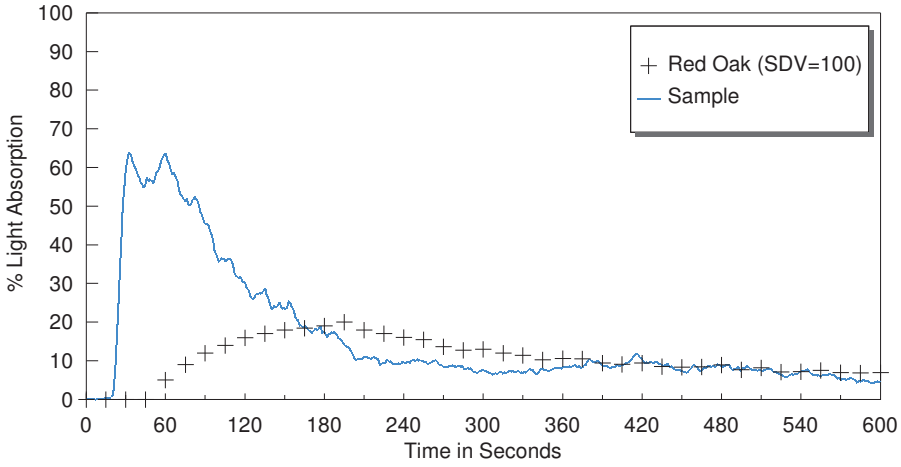
Sample: "Architent Excel 18"

Test #1 of 3

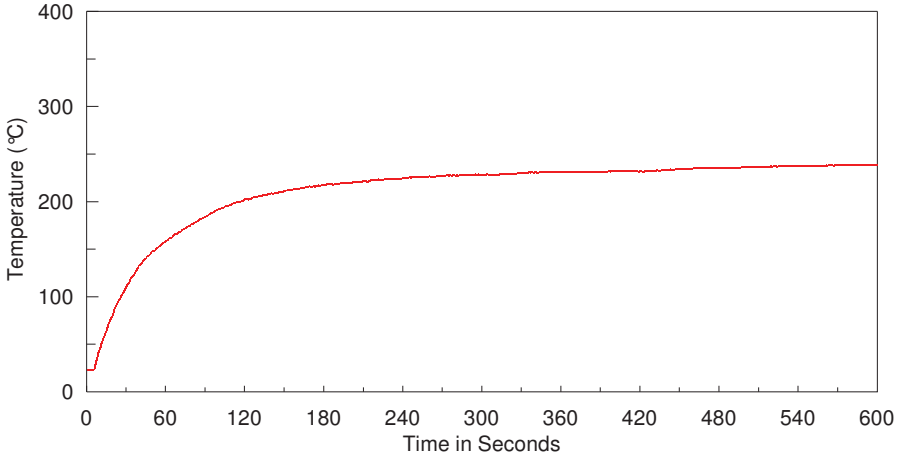
FLAME SPREAD



SMOKE DEVELOPED



TEMPERATURE

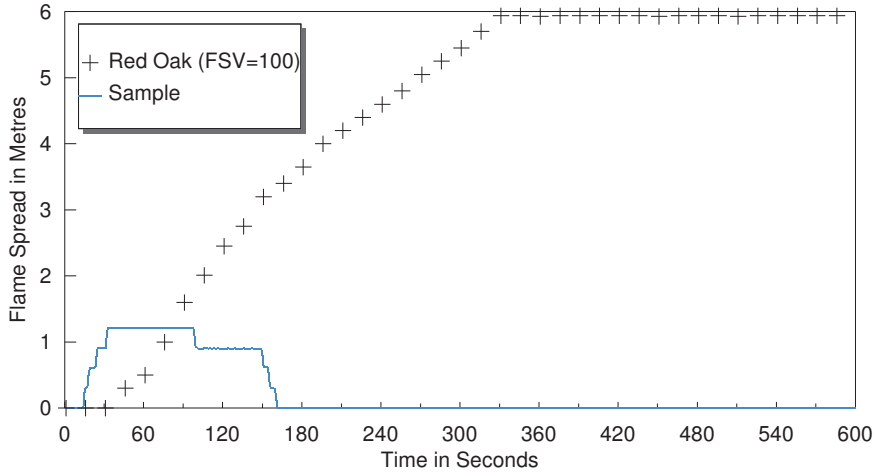


FSV	SDV	Max. Temp. (°C)
16	115	239

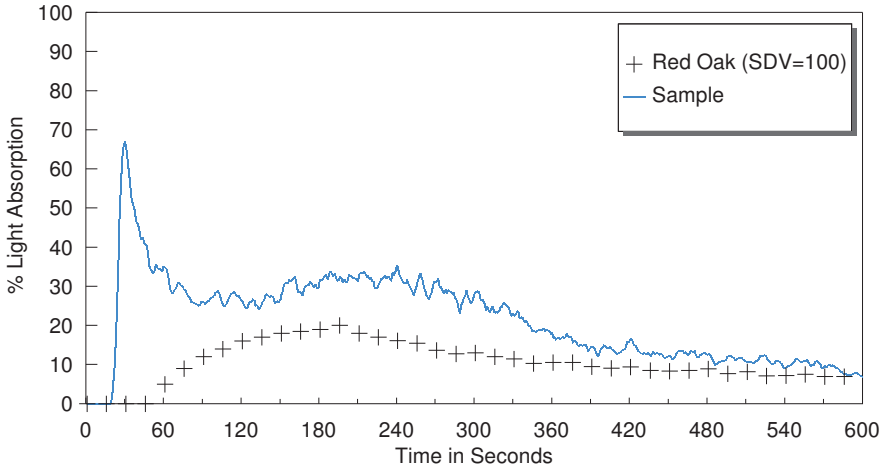
Sample: "Architent Excel 18"

Test #2 of 3

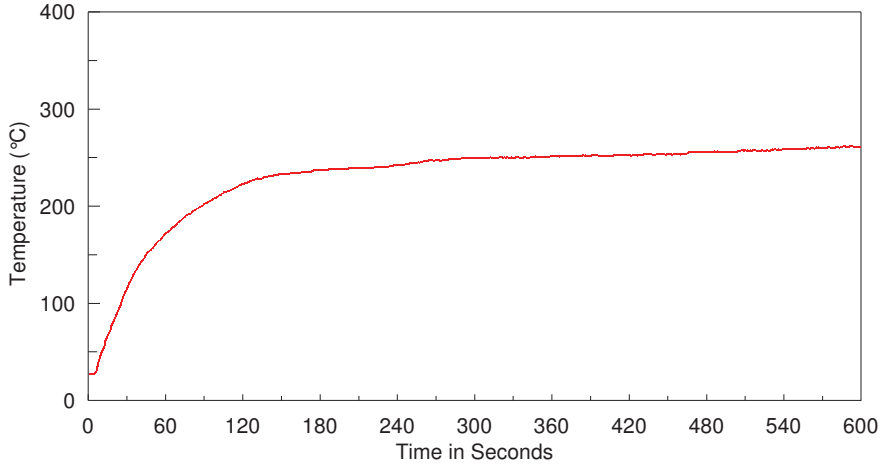
FLAME SPREAD



SMOKE DEVELOPED



TEMPERATURE

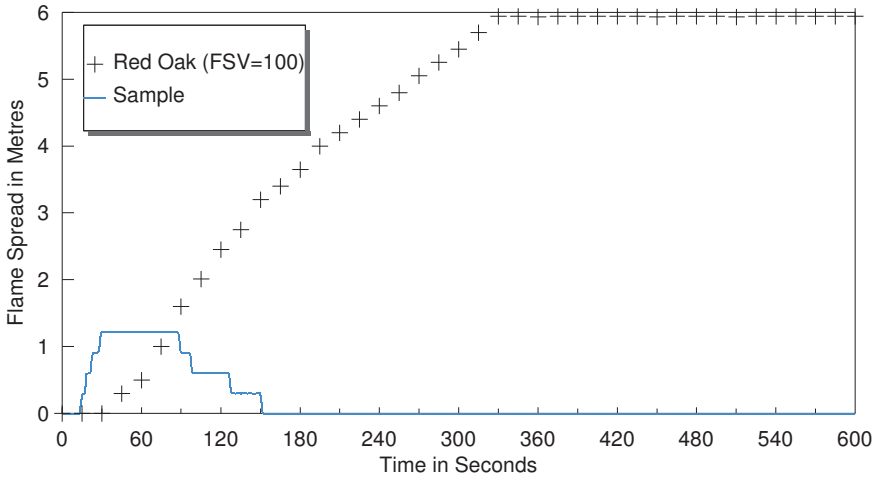


FSV	SDV	Max. Temp. (°C)
22	153	262

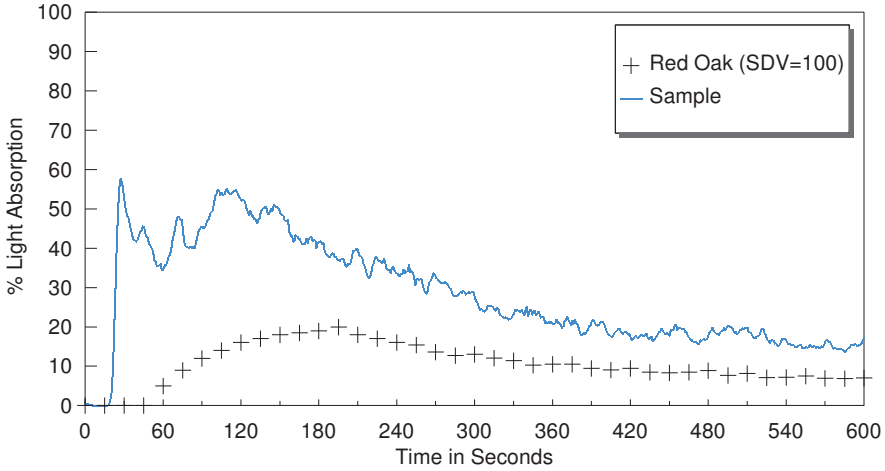
Sample: "Architent Excel 18"

Test #3 of 3

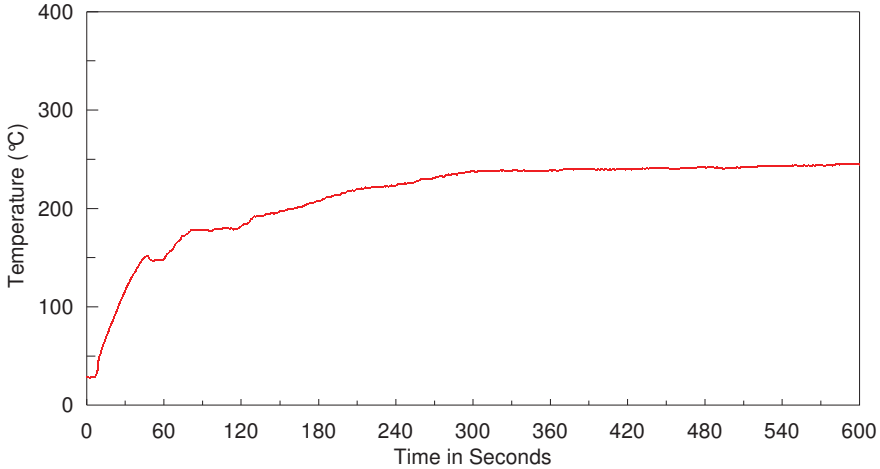
FLAME SPREAD



SMOKE DEVELOPED



TEMPERATURE



FSV	SDV	Max. Temp. (°C)
22	201	246

Exova
2395 Speakman Dr.
Mississauga
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Canada
L5K 1B3

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E: sales@exova.com
W: www.exova.com

Testing. calibrating. advising

CAN/ULC-S109 Flame Resistance of "Architent Excel 18" Material

A Report To:	**Herculite Products** Aberdeen Road Emigsville, PA 17318 USA
Phone:	(717) 764-1192
E-mail:	smummert@herculite.com
Attention:	Stephanie Mummert
Submitted By:	Exova Warringtonfire North America
Report No.	14-002-543(A) 3 pages + appendix
Date:	September 12, 2014

ACCREDITATION To ISO/IEC 17025 for a defined Scope of Testing by the International Accreditation Service

SPECIFICATIONS OF ORDER

Determine flame resistance in accordance with the CAN/ULC-S109-03 Small and Large Flame Tests, as per your PO3051 dated 8/26/2014.

IDENTIFICATION

Material identified as 111131 Lot 15601H: "Architent Excel 18."

(Exova sample identification number 14-002-S0543)

TEST RESULTS

CAN/ULC-S109-03 Small-Flame Test

Standard Methods of Tests for Flame-Resistant Textiles and Films

Tested "as-received"

Fabric Weight: 721 g/m²		Damaged Length (mm)	Afterflame Time (s)	Flaming Dripping (s)	
Machine Direction	1:	96	4.6	0.0	
	2:	108	2.3	0.0	
	3:	101	9.1	0.0	
	4:	104	4.6	0.0	
	5:	105	2.5	0.0	
Cross Direction	6:	89	7.9	0.0	
	7:	94	3.8	0.0	
	8:	82	1.7	0.0	
	9:	105	2.6	0.0	
	10:	90	5.0	0.0	
Average:		97	-	-	
Maxima Specified by ULC-S109 Small Flame Test:		165	-	-	(average)
		190	-	2.0	(individual)

TEST RESULTS (continued)

CAN/ULC-S109-03 Large Flame Test

Standard Methods of Tests for Flame-Resistant Textiles and Films

Tested "as-received" and in single sheet configuration.

	Damaged Length (mm)	Afterflame Time (s)	Flaming Dripping (s)	
Machine Direction 1:	41	0.0	0.0	
2:	37	0.0	0.0	
3:	52	0.0	0.0	
4:	43	0.0	0.0	
5:	46	0.0	0.0	
Cross Direction 6:	35	0.0	0.0	
7:	38	0.0	0.0	
8:	40	0.0	0.0	
9:	36	0.0	0.0	
10:	36	0.0	0.0	
Average:	40	-	-	
Maxima Specified by ULC-S109 Large Flame Test:	-	-	-	(average)
	250 (Above tip of test flame)	-	2.0	(individual)

CONCLUSIONS

When tested "as-received" only, the material identified in this report meets the flame resistance requirements of both the Small-Flame and Large-Flame Tests of CAN/ULC-S109-03.

Note: This is an electronic copy of the report. Signatures are on file with the original report.

Victor Tarcenco,
Technologist

Ian Smith,
Technical Manager

Note: This report and service are covered under Exova Canada Inc. Standard Terms and Conditions of Contract which may be found on the Exova website (www.exova.com), or by calling 1-866-263-9268.

APPENDIX

(1 Page)

Summary of Test Procedure

CAN/ULC-S109-03

Standard Methods of Tests for Flame-Resistant Textiles and Films

Small-Flame Test

Ten specimens are cut, each 70 x 250 mm, with five in the warp direction and five in the weft direction, where applicable. The specimens are conditioned for 30 minutes at 105±2°C, then allowed to cool in a dessicator before testing. In case they melt or distort at these temperatures, pre-dry at 18 - 22°C at 50% R.H. for at least 12 hours or by drying in an oven for 1 hour at 60°C.

Each specimen is removed from the conditioning chamber individually, clamped in a U-shaped metal holder and suspended in a specified cabinet. The free edge of the specimen is positioned 20 mm above the tip of a gas burner which has been adjusted to yield a flame height of 40 mm. Flame exposure time is 12 seconds. Char length and afterflame time are measured.

Flame Resistance Requirements:

Maximum Average Length of Char or Destroyed Material for Ten Specimens	Maximum Length of Char or Destroyed Material for any Specimens
165 mm	190 mm

The specified maximum flaming time for residue on the floor of the tester from any specimen is 2.0 seconds.

Large-Flame Test

For conducting flame tests of fabrics in single sheets, the procedure specifies ten specimens, 125 mm by 750 mm to 2100 mm long. The specimens are conditioned at 105 ±2°C for 30 minutes or, if distortion or melting occurs at these temperatures, 20 ± 2°C at 25 - 50% relative humidity for at least 12 hours or by drying in an oven for 1 hour at 60°C.

Each specimen is removed from the conditioning chamber and cooled in a desiccator prior to being suspended in a steel stack 310 mm square and 2130 mm high, the said stack being open both top and bottom and supported 300 mm above the floor. The lower edge of the specimen is positioned 100 mm above the tip of a gas burner which is inclined at 25° to the vertical. The burner, which has been adjusted to yield a flame 280 mm in height is ignited and inserted directly beneath the specimen for 2 minutes. Char length is measured from the tip of the flame, upwards.

For conducting flame tests of fabrics hung in folds, at least four specimens 625 mm by 750 mm to 2100 mm are required. Each specimen is folded longitudinally to form four folds.

Flame Resistance Requirements - Specified Maxima:

Specimen Configuration	Char Length or Damaged Material Length (mm)	Flaming Residue on Floor of Tester (s)
Single sheets	250	2.0
Folded	635	2.0

Note: As stated in the standard, "fabrics shall comply with both the Small-Flame and the Large-Flame Test".