

Installer's Guide

Horizontal Air Handlers 2 – 3 Ton

4FWFA

ALL phases of this installation must comply with NATIONAL, STATE AND LOCAL CODES

Important: This Document is customer property and is to remain with this unit. Please return to service information pack upon completion of work.

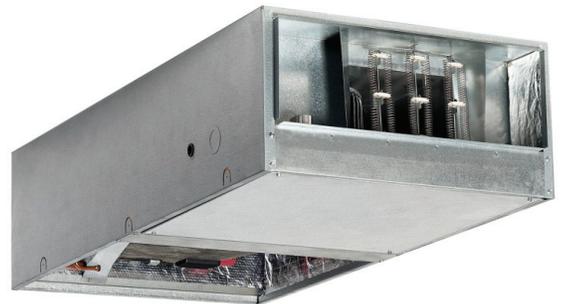
The 4FWF series is designed for horizontal recessed installations in a furred down area, above a suspended ceiling or recessed in the ceiling. 4FWF models are for electric heat, cooling, and heat pump applications. The unit can be configured for return air flow through the integral access panel or at the end of the unit. Installation tabs are built into the cabinet to facilitate mounting the unit. Optional panels are available that allow a wide range of installation options. Electric resistance heaters are factory installed. Full service of all components is easily accomplished through the access panel.

Section 1. Features

1.1 Standard Features

STANDARD FEATURES

- DESIGNED FOR INSTALLATION IN A FURRED DOWN AREA OR DROPPED CEILING AREA
- COOLING & ELECTRIC HEATING, OR HEAT PUMP WITH ELECTRIC BACK UP
- FACTORY INSTALLED ELECTRIC HEAT OF EITHER 5,8, OR 10 KW (208/230 VAC)
- COOLING CAPACITIES OF 2.0, 2.5, OR 3.0 NOMINAL TONS
- TXV REFRIGERANT METERING DEVICE
- ALL ALUMINUM COIL
- FACTORY INSTALLED TIME DELAY RELAY
- PRE-PUNCHED SIDE MOUNTING TABS FOR EASIER INSTALLATIONS
- POWDER COATED HINGED ACCESS PANELS MUST BE ORDERED SEPARATELY
- FULL INSULATED EMBOSSED GALVANIZED STEEL CABINETS



1.2 Heater Selection Table

AIR HANDLER MODEL NUMBER WITH FACTORY INSTALLED HEATER			
Model +	5 Kw Terminal Block	8 Kw Terminal Block	10 Kw Terminal Block
4FWFA024	A1005A	A1008A	A1010A
4FWFA030,31	N/A	A1008A	A1010A
4FWFA036	N/A	N/A	A1010A

Note: Complete model number includes air handler size plus factory installed heater selection.

Example: 4FWFA024A1005A = a 2 ton air handler with 5 Kw electric heater with terminal block

Manufactured in the U.S.A.

Section 2. Safety Information

WARNING

SAFETY HAZARD! This information is intended for use by individuals possessing adequate backgrounds of electrical and mechanical experience. Any attempt to repair a central air conditioning product may result in personal injury and/or property damage. The manufacturer or seller cannot be responsible for the interpretation of this information, nor can it assume any liability in connection with its use.

WARNING

HAZARDOUS VOLTAGE!

Disconnect all electrical power, including remote disconnects before installing or servicing. Follow proper lockout/tagout procedures to ensure the power can not be inadvertently energized. Failure to disconnect power before servicing could result in death or serious injury.

WARNING

LIVE ELECTRICAL COMPONENTS! During installation, testing, servicing, and troubleshooting of this product, it may be necessary to work with live electrical components. Failure to follow all electrical safety precautions when exposed to live electrical components could result in death or serious injury.

WARNING

EXPLOSION HAZARD!

Do not store corrosive or combustible materials, gasoline, or other flammable vapors or liquids near the unit. Failure to follow this warning could result in property damage, serious personal injury, or death.

WARNING

ELECTRICAL HAZARD!

Grounding Required! Follow proper local and state electrical code on requirements for grounding. Failure to follow this warning could result in property damage, serious personal injury, or death.

CAUTION

HAZARDOUS VAPORS! Do not install an air handler with a non-ducted return in the same closet, alcove, or utility room as a fossil fuel device. Hazardous vapors can be distributed throughout the conditioned space and equipment damage can result.

Important: These instructions do not cover all variations in systems nor provide for every possible contingency to be met in connection with the installation. Should further information be desired or should particular problems arise which are not covered sufficiently for the purchaser's purposes, the matter should be referred to your installing dealer or local distributor.

Important: Units are not evaluated for mobile home applications.

CAUTION

Coil is pressurized. Release pressure at service port before opening tubes.

- Coil is pressurized with approximately 25 psi nitrogen.
- Carefully release the pressure by depressing the valve core of the service port before un-sweating the tubing cap.
- If no pressure is released, check for leaks.
- Once pressure is released, un-sweat the vapor line cap.
- Use a tubing cutter to open the liquid line.

CAUTION

CORROSION HAZARD! To prevent shortening its service life, the air handler should not be used during the finishing phases of construction. The low return air temperatures can lead to the formation of condensate. Condensate in the presence of chlorides and fluorides from paint, varnish, stains, adhesives, cleaning compounds, and cement creates a corrosive condition which may cause rapid deterioration of the cabinet and internal components.

CAUTION

SAFETY HAZARD! Sharp Edge Hazard. Be careful of sharp edges on equipment or any cuts made on sheet metal while installing or servicing. Personal injury may result.

Important: Installation of this unit shall be made in accordance with the National Electric Code, NFPA No. 90A and 90B, and any other local codes or utilities requirements.

WARNING

THIS PRODUCT CONTAINS FIBERGLASS WOOL INSULATION! FIBERGLASS DUST AND CERAMIC FIBERS ARE BELIEVED BY THE STATE OF CALIFORNIA TO CAUSE CANCER THROUGH INHALATION. GLASSWOOL FIBERS MAY ALSO CAUSE RESPIRATORY, SKIN, OR EYE IRRITATION.

PRECAUTIONARY MEASURES

- Avoid breathing fiberglass dust
- Use a NIOSH approved dust/mist respirator
- Avoid contact with the skin or eyes. Wear long-sleeved, loose fitting clothing, gloves, and eye protection.
- Wash clothes separately from other clothing, rinse washer thoroughly.
- Operations, such as sawing, blowing, tear-out, and spraying may generate fiber concentrations requiring additional respiratory protection. Use the appropriate NIOSH approved respirator in these situations.

FIRST AID MEASURES

EYE CONTACT: FLUSH EYES WITH WATER TO REMOVE DUST
IF SYMPTOMS PERSIST, SEEK MEDICAL ATTENTION.
SKIN CONTACT: WASH AFFECTED AREA GENTLY WITH SOAP
AND WARM WATER AFTER HANDLING.

Note: Condensation may occur on the surface of the air handler when installed in an unconditioned space. When units are installed in unconditioned spaces, verify that all electrical and refrigerant line penetrations on the air handler are sealed completely.

Note: The manufacturer recommends installing ONLY A.H.R.I. approved, matched indoor and outdoor systems. Some of the benefits of installing approved matched indoor and outdoor split systems are maximum efficiency, optimum performance, and the best overall system reliability.

Section 3. Installation Instructions

3.1 Unpacking

Carefully unpack the unit and inspect the contents for damage. If any damage is found at the time of delivery, proper notification and claims should be made with the carrier who delivered the unit.

Check the rating plate to assure model number and voltage, plus any kits agree with what you ordered. The manufacturer should be notified within 5 days of any discrepancy or parts shortage.

3.2 Location

The blower coil unit should be centrally located and may be installed above a suspended ceiling with integral return panel, in a furred down area with remote or integral return, or recessed in the ceiling.

This unit is approved for "0" clearance from any side, front, rear or duct work. The unit must be installed in a level position to ensure proper condensation drainage. Make sure the unit is level in both directions within 1/8" on either side.

The unit incorporates installation tabs that mount to the framing and provide a 1/2 inch flange to trim to the finished edge of a sheetrock ceiling. The access panel mounts to the cabinet and trims the installation.

All service entrances and exits on the cabinet are recessed to allow for 2 x 4 framing of the opening the cabinet will be centrally located within. Any modifications to existing framing should be accomplished by the general contractor to ensure structural strength is maintained in the structure. The structural opening in the framing for the 4FWFA031-36 series should be 51 1/4" long and 23 1/4" wide. The structural opening in the framing for the 4FWFA024-30 series should be 47 1/4" long and 23 1/4" wide. The unit should be positioned where the bottom edge of the cabinet is 1/2 inch below the framing member.

3.3 Duct Work

The duct work should be installed in accordance with the NFPA No. 90A "Installation of Air Conditioning and Ventilating systems" and No. 90B "Residential Type Warm Air Heating and Air Conditioning Installation."

The duct work should be insulated in accordance with the applicable requirements for the particular type installation as required by HUD, FHA, VA the applicable building code, local utility or other governing body.

3.4 Condensate Drain

The unit is supplied with 3/4 inch primary and auxiliary condensate drains. Both drains must be trapped outside the unit and piped in accordance with applicable building codes. Do not reduce the drain line size less the connection size on the drain pan. Condensate should be piped to an open drain or to the outside. All drains must pitch downward away from the unit a minimum of 1/8" per foot of line to ensure proper drainage. Insulate the primary drain line to prevent sweating where dew points temperatures may be met. (Insulation is optional depending on climate and application needs.)

3.5 Refrigerant Piping

Refrigerant pipe connections are located on the left side of the unit. Refrigerant piping external to the unit shall be sized in accordance with the instructions of the manufacturer of the outdoor equipment. When units are recessed mounted in the wall, make certain that piping connections are pressure tested prior to the wall being closed.

3.6 Metering Device

All units are shipped with a non-bleed, internally checked TXV installed which is designed for air conditioning or heat pump operation.

3.7 Wiring

Consult all schematic and pictorial wiring diagrams of this unit and the outdoor equipment to determine compatibility of the wiring connections and to determine specific requirements.

All field wiring to the blower coil should be installed in accordance with the latest edition of the National Electric Code NFPA No. 70 and any local codes. Check rating plates on unit for rated volts, minimum circuit ampacity and maximum over current protection. Supply circuit power wiring must be 75 degree C. (167 degree F) minimum copper conductors only. Copper supply wires shall be sized to the National Electric Code or local code requirements, whichever is more stringent.

The unit is shipped wired for 230/240 Volt AC 60 HZ 1 Phase Operation. If the unit is to operated at 208 VAC 60HZ, then follow the instruction on the indoor unit wiring diagram to change the low voltage transformer to 208 VAC operation.

Be sure the unit is properly grounded.

Class 2 low voltage control wiring should not be run in conduit with power wiring and must be separated from power wiring, unless class 1 wire of proper voltage rating is used. Low voltage control wiring should be 18 Awg, color coded (105 degree C minimum). For lengths longer than 100ft., 16 Awg wire should be used. Make certain that separation of control wiring and power wiring has been maintained.

3.8 Thermostat

Select a thermostat that is commonly used with HP or AC single stage heating/cooling with electric heat. This thermostat will energize the fan on a demand for heat or cool.

Install the thermostat on an inside wall, away from drafts, lights or other heat sources in a location that has good air circulation from the other rooms being controlled by the thermostat. The thermostat should be mounted 4 to 5 feet above the floor.

3.9 Sequence of Operation

Cooling (cooling only). When the thermostat calls for cooling, the blower relay is energized. The N.O. contacts will close, after a 30 second time delay, the indoor blower will operate. The circuit from R to Y is completed: causing the contactor on the outdoor equipment to close and start the compressor and the outdoor fan motor.

Cooling (heat pump). When the thermostat calls for cooling, the circuits from R to G and R to O are completed. Circuit R to O energizes the reversing valve to the cooling position, Circuit R to G energizes blower relay. The N.O. contacts will close, after a 30 second time delay, the indoor blower will operate. The circuit from R to Y is completed: causing the contactor on the outdoor equipment to close and start the compressor and the outdoor fan motor.

Heating (electric heat only). When the thermostat calls for heat, the circuit from R to W is completed, the heat sequencer is energized. A time delay will occur: Then the heating element(s) and the indoor blower motor will come on.

Heat pump. When the thermostat calls for heat, the circuits from R to Y and R to G are completed. Circuit R to Y energized the outdoor unit contactor starting the compressor and outdoor fan. Circuit R to G energizes the blower relay starting the blower motor.

If the indoor room temperature should continue to fall, circuit R to W is closed by the thermostat energizing the electric heat sequencer. The completed circuit will energize the supplemental electric heat.

Blower Time Delay. This unit is equipped with a 30 second timed on and a 30 second timed off relay. This relay delays the start and delays the stopping of the indoor fan motor to maximize the efficiency of the unit.

Defrost. Supplemental heat during defrost can be provided by connecting Brown on the blower coil to the defrost relay on the outdoor heat pump. This will complete the circuit from R to Brown (in the blower coil) through a set of contacts in the defrost relay in the outdoor unit when the unit starts the defrost cycle. This circuit, when it is connected, will help prevent cold air from being discharged from the indoor unit during the defrost

3.10 Blower

Units are supplied with a multi-speed (high, medium & low) motor with direct drive blower wheel which can obtain various air flows. 2 ton units are factory wired on medium speed. 2.5 ton and 3 ton units are factory wired on high speed. If a different motor speed is required, disconnect all power to the unit, remove the factory wired indoor fan motor lead from the fan relay and place an insulated cap on the removed motor lead. Remove the insulated cap from the desired indoor fan motor lead, place a spade connector on the lead and connect it to the fan relay where the original lead was connected. The black motor lead is high speed, the red motor lead is low speed, and the blue motor lead (if available) is medium speed. Be sure to check the air flow and the temperature drop across the evaporator coil to ensure that you have sufficient airflow.

3.11 Operational And Checkout Procedures

Final phases of this installation are the unit Operational and Checkout Procedures. To obtain proper performance, all units must be operated and charge adjustments made in accordance with procedures found in the Service Facts of the Outdoor Unit.

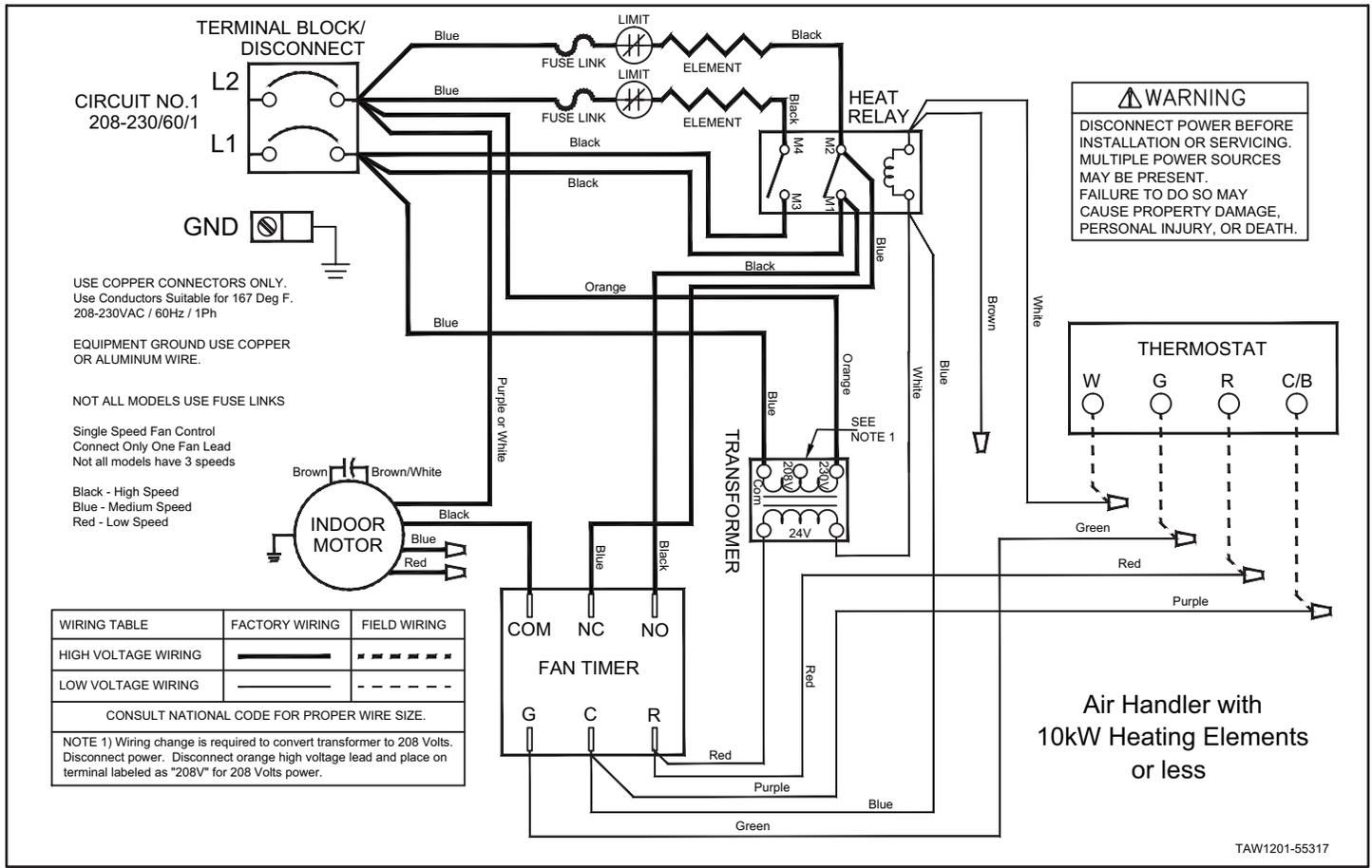
After installation has been completed, it is recommended that the entire system be checked against the following list:

- | | |
|--|---|
| 1. Be sure unit suspension (if used) is secure and that there are no tools or loose debris in or around or on top of the unit.[] | 5. Check all duct outlets; they must be open and unrestricted.[] |
| 2. Properly insulate suction lines and fittings.[] | 6. Check drain lines and be sure all joints are tight. .[] |
| 3. Properly secure and isolate all refrigerant lines. ..[] | 7. Be sure the return air filter is installed.....[] |
| 4. Verify that all electrical connections are tight.[] | 8. Operate complete system in each mode to verify proper performance. Verify operation of supplementary electric heater.....[] |

3.12 Maintenance

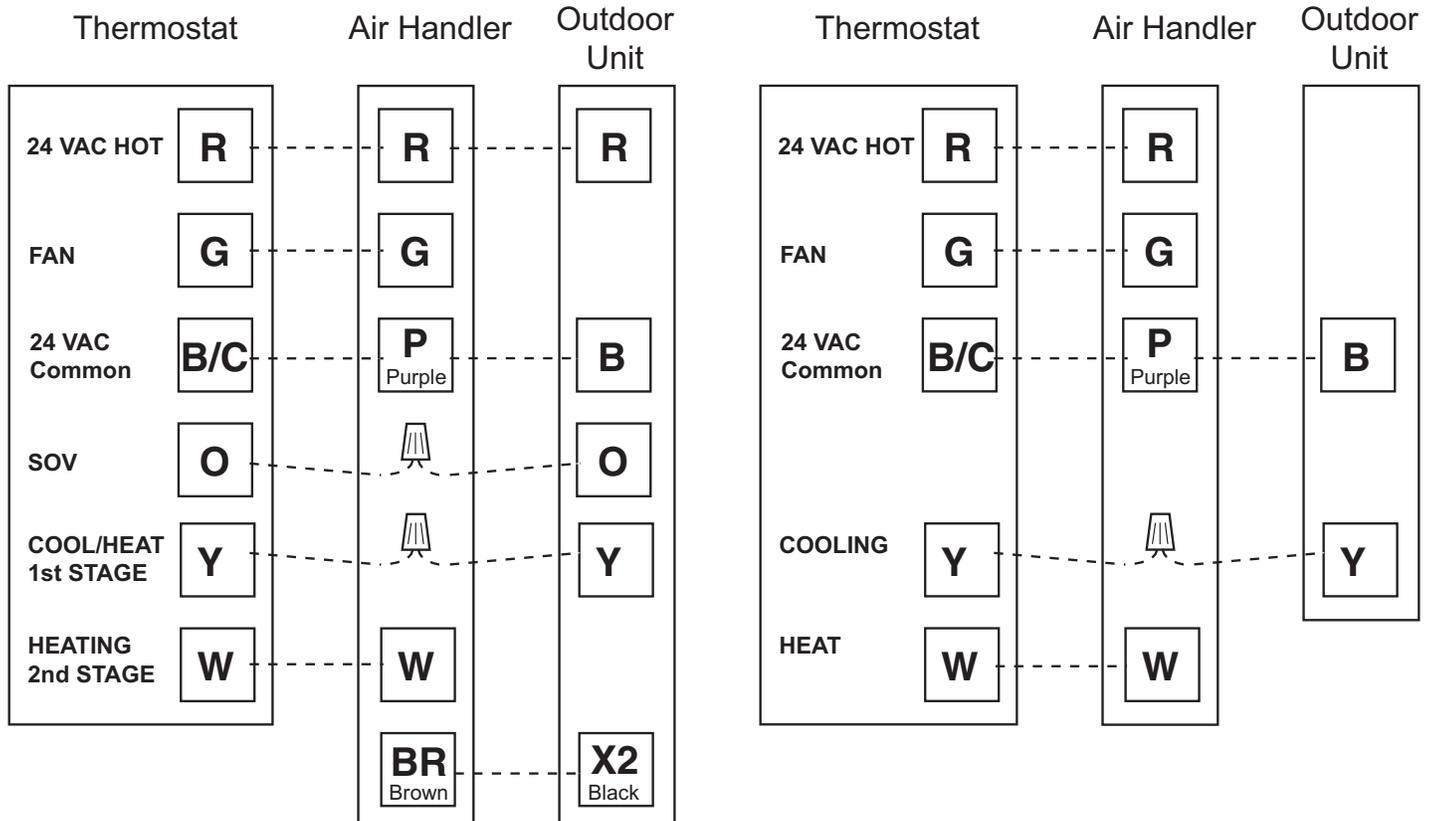
The system air filter(s) should be inspected, cleaned or replaced at least monthly. Make sure that electrical power is disconnected before removing the access panels. Make certain that the access panels are replaced and secured properly before placing the unit back in operation. This product is designed for dependable service; however, periodic maintenance should be scheduled to be conducted by trained professional service personnel. This service should be conducted at least annually, and should include testing and inspection of electrical and refrigerant components. The heat transfer surface should be cleaned. The blower motor is permanently lubricated for normal operating conditions.

Section 4. Wiring



HEAT PUMP SYSTEMS

AC SYSTEMS



Section 5. Performance Data

4FWFA BLOWER PERFORMANCE				
MODEL	Speed	External Static Pressure		
		0.1	0.2	0.3
4FWFA024	Low	740	670	610
	Medium	970	850	760
	High	1020	950	840
4FWFA030,31	Low	740	670	610
	Medium	970	850	760
	High	1020	950	840
4FWFA036	Low	1020	950	870
	Medium	1140	1100	1040
	High	1250	1200	1150

Notes:
Ratings based on blower high speed connection
Ratings are for dry coil with filter in place.
Air flow is measured with 240 volts and 80/67 entering air.

ELECTRICAL SPECIFICATIONS					
MODEL	KW @ 240 VAC	BTUH	AMPS	MCA	MOP
4FWFA024					
-5	4.8	16,411	22	27	30
-8	8	27,304	35	44	50
-10	9.6	32,764	42	52	60
4FWFA030,31					
-8	8	27,304	36	45	50
-10	9.6	32,764	43	53	60
4FWFA036					
-10	9.6	32,764	43	53	60

Notes:
De-rate BTUH capacity by 25% for ratings at 208 VAC.
Refer to prevailing electrical code for wire and over current sizes.

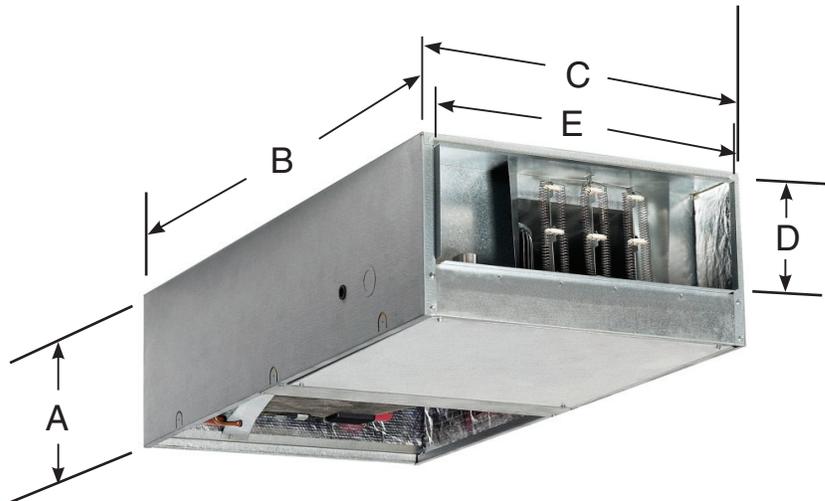
Section 6. Dimensional Data

4FWFA Air Handlers

CAUTION

Coil is pressurized. Release pressure at service port before opening tube.

- 3/8" Liquid Line
3/8" coupler is supplied.
- 3/4" Suction Line
- 3/4" NPT Primary and Secondary
Drain connections are standard.



PRODUCT DIMENSIONS

Air Handler Model	Cabinet			Plenum	
	Height	Length	Width	Height	Width
	A	B	C	D	E
4FWFA024,30	12	47	22.5	8	20.75
4FWFA031,36	12	51	22.5	8	20.75

All dimensions are in inches.

ACCESSORY DIMENSIONS

	Filter Size	Optional Return Opening	Access Grill Width	Access Grill Length
4FWFA024,30	22 x 22	21 x 7.5	27.25	51.25
4FWFA031,36	22 x 22	21 x 7.5	27.25	55.25

All dimensions are in inches.

BAYFPNLSOL03AA - 024, 030	Solid, Hinged Access Panel
BAYFPNLSOL04AA - 031, 036	
BAYFPNLLOU03AA - 024, 030	Louvered, Hinged Access Panel
BAYFPNLLOU04AA - 031, 036	

