



installation, start-up and service instructions

619F
2 to 4 Tons

IN-CEILING CASSETTE FAN COIL UNITS

Cancels: New

II 619F-24-1
2/15/96

IMPORTANT — READ BEFORE INSTALLING

1. Read and become familiar with these installation instructions before installing this unit. See Fig. 1.
2. Be sure the installation conforms to all applicable local and national codes.
3. These instructions contain important information for the proper maintenance and repair of this equipment. Retain these instructions for future use.

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SAFETY CONSIDERATIONS

⚠ WARNING: Improper installation, adjustment, alteration, service, maintenance, or use can cause explosion, fire, electric shock, or other occurrences which may injure you or damage your property. Consult qualified installer or service agency for information or assistance. The qualified installer or agency must use only factory-authorized kits or accessories when modifying this product.

Recognize safety information. This is the safety-alert symbol (⚠). When you see this symbol on the unit and in instructions or manuals, be alert to the potential for personal injury.

Understand the signal words — DANGER, WARNING, and CAUTION. These words are used with the safety-alert symbol. Danger identifies the most serious hazards which will result in severe personal injury or death. Warning indicates a condition that could result in personal injury. Caution is used to identify unsafe practices which would result in minor personal injury or product and property damage.

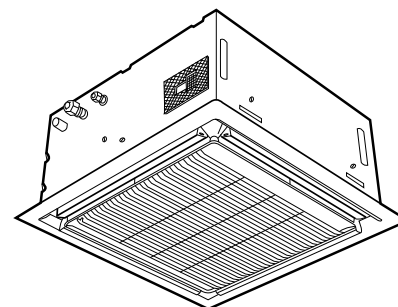


Fig. 1 — 619F Fan Coil Unit (024 shown)

⚠ WARNING: Be sure all power to equipment is shut off before performing maintenance or service. More than one disconnect may be present.

1. The power supply (v, ph, and Hz) must correspond to that specified on unit rating plate.
2. The electrical supply provided by the utility must be sufficient to handle load imposed by this unit.
3. Refer to Installation section (below) and Fig. 2 and 3 for locations of electrical inlets, condensate drain, duct connections, and required clearances before setting unit in place.
4. This installation must conform with local building codes and with the NEC (National Electrical Code) or ANSI (American National Standards Institute)/NFPA (National Fire Protection Association) 70-1990. Refer to provincial and local plumbing or wastewater codes and other applicable local codes.

INSTALLATION

The 619F-OEO cooling-only, in-ceiling cassette fan coil units are generally installed with the 538A outdoor condensing unit or the 538S multi-split outdoor condensing unit. The 538B outdoor heat pump unit is generally installed with the 619F-OWO heat pump in-ceiling cassette fan coil units. Refer to Table 1 to make sure the correct indoor unit is installed with the correct outdoor unit. For 619F fan coil installation instructions, refer to Steps I through VII. For 538 Series outdoor unit installation instructions, refer to the appropriate outdoor unit Installation, Start-Up and Service Instructions.

NOTE: Outdoor condensing units may be installed with indoor heat pump units. Refer to Table 1 for acceptable combinations.

UNIT 619F-	OPERATING WEIGHT	
	Lb	Kg
024	61.6	28

NOTES:

1.  indicates airflow.
2. Dimensions in [] are in millimeters.
3. Service clearance is 2 ft on control box side, 0 in. all other sides.
4. Air discharge slots are adjustable; one or 2 may be closed to direct air in the desired direction.
5. Grille is shipped separately from unit.
6. Condensate pump has 20-in. lift capability.
7. AccuRater® device(s) is a required field-installed accessory for 538A and 538B systems. It is not required for 538S systems.

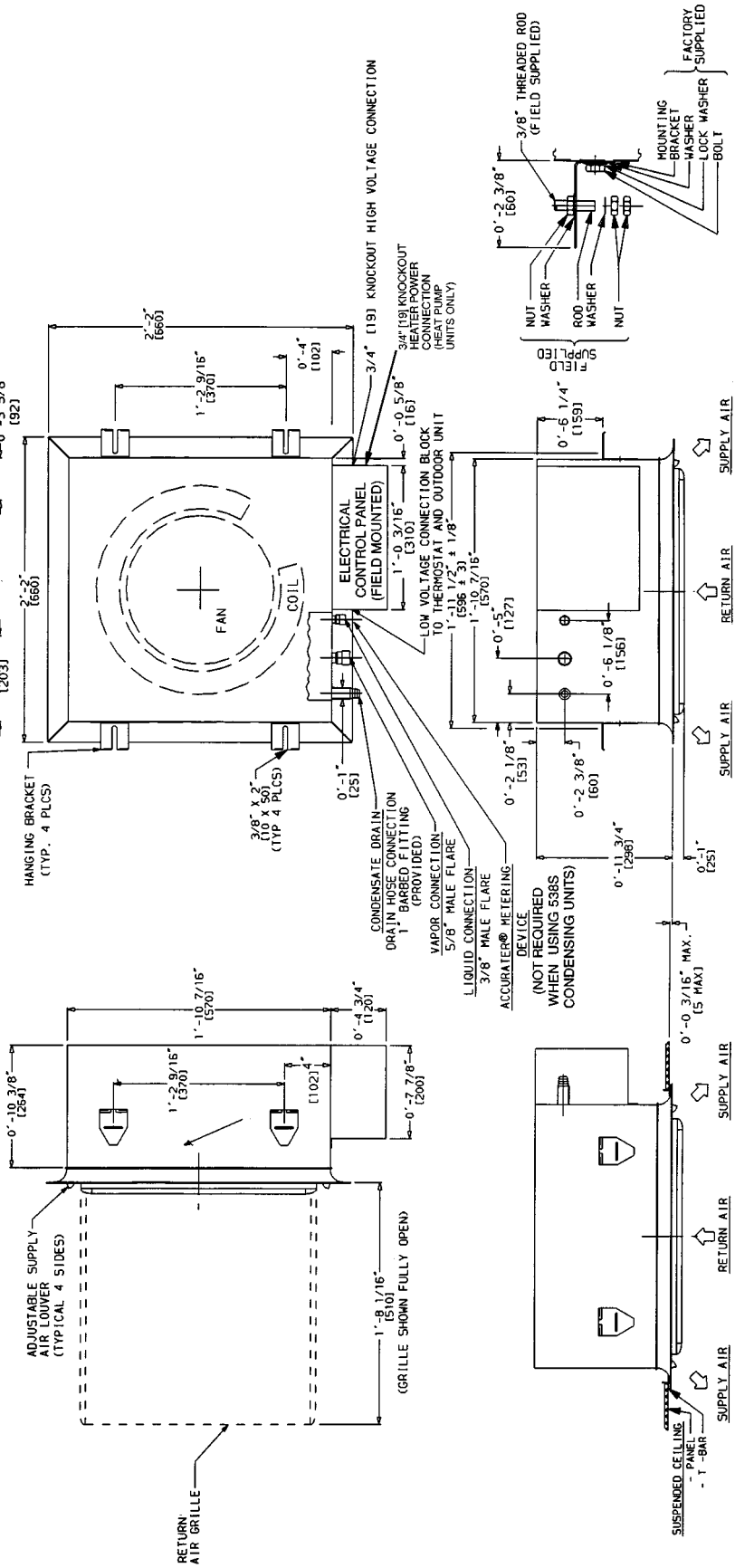


Fig. 2 — Base Unit Dimensional Drawing, 619F-024

UNIT 619F-	OPERATING WEIGHT	
	Lb	Kg
036	105.8	48
048*	118.0	53

*OWO heat pump fan coil units only.

NOTES:

-  Indicates airflow.
- Dimensions in [] are in millimeters.
- Service clearance is 2 ft on control box side, 0 in. all other sides.
- Air discharge slots are adjustable; one or 2 may be closed to direct air in the desired direction.
- Grille is shipped separately from unit.
- Condensate pump has 20-in. lift capability.
- AccuRater® device(s) is a required field-installed accessory for 538A and 538B systems. It is not required for 538S systems.

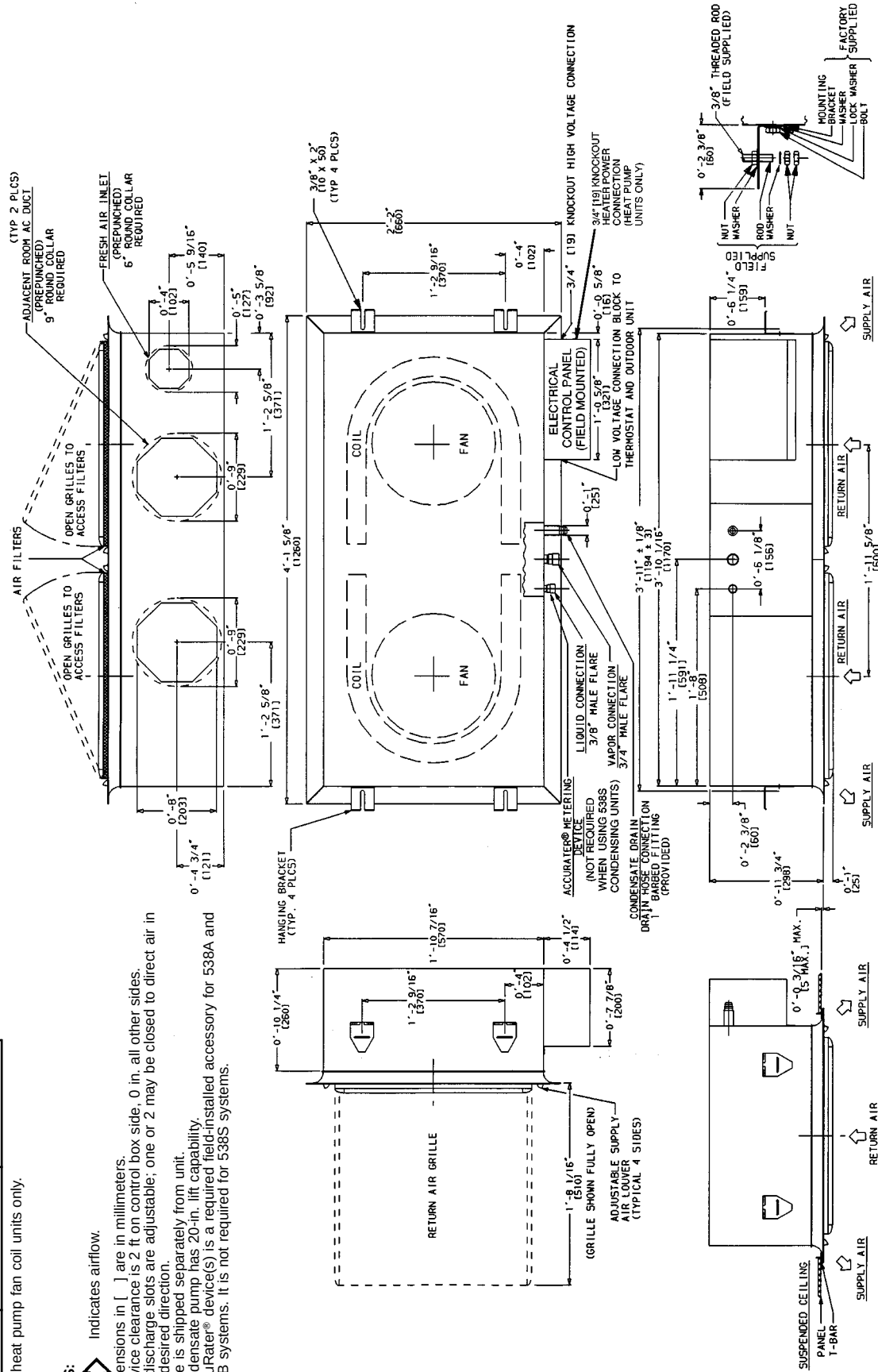


Fig. 3 — Base Unit Dimensional Drawing, 619F_036,048

IMPORTANT: When installing the 538A or 538B outdoor unit in cooling applications where the outdoor air temperature is below 55 F, it is necessary to equip the outdoor unit with the low-ambient control accessory. The 538S units can operate in cooling at outdoor ambient temperatures down to 0° F with no additional accessories.

NOTE: Grille and frame are shipped in a separate container and are required to complete assembly. Accessory thermostat and AccuRater® refrigerant metering device (538A, 538B only) are also required.

I. COMPLETE PRE-INSTALLATION CHECKS

A. Unpack Unit

Store fan coil unit in the original packaging until it is moved to the final site for installation. Carefully remove fan coil, control box, and plastic bag which contains drain connector and mounting screws. When removing fan coil unit from carton make sure it is lifted by its 4 corners and not by the condensate drain or refrigerant connections. The grille is packed separately for extra protection.

B. Inspect Shipment

Upon receipt of shipment, check unit (Fig. 1) for damage. Forward claim papers directly to the transportation company. Manufacturer is not responsible for damage incurred in transit.

After checking shipment, leave all parts in their original packages until installation.

II. SELECT LOCATION

Consult local building codes and NEC for special installation requirements.

The ceiling-mounted fan coil unit can be installed several ways. As a typical installation, these instructions focus on mounting the unit above a false ceiling to wooden beams, newly or previously built concrete slabs, or metal structure.

Before you begin, **PLAN CAREFULLY**, measure carefully, and follow acceptable building practices and the NEC. Listed below are some guidelines that should be followed when installing the unit.

- Position fan coil unit as close to the center of the room as possible to ensure air is distributed evenly.
- Allow sufficient space for airflow clearance, wiring, refrigerant piping, and servicing unit. Also, when determining the final location of the fan coil unit, consider if conditioned air will be discharged to an adjacent room or ventilated air will be used.
- Install removable ceiling panels adjacent to the unit for servicing. Refer to Fig. 2 and 3 for service clearances.
- Make sure thermostat is not located in the fan coil unit's direct air discharge, on an outside wall, or in direct sunlight from an adjacent window.
- **DO NOT USE** more than 50 ft of EQUIVALENT interconnecting tubing or more than 30 ft of VERTICAL lift between the lowest system component and the highest system component on 538S multi-split systems.

Table 1 — Acceptable System Combinations for Indoor and Outdoor Units

OUTDOOR UNIT		INDOOR UNIT	
Type	Model Number 538	Type	Model Number 619F_*
Cooling Only	A_018	Cooling Only	024OEO
	A_024		036OEO
	A_030		
	A_036		Heat Pump
	A_018	036OWO	
	A_036		
Cooling Only Multi-Split†	S_024	Cooling Only	(2) 024OEO
	S_048		(4) 024OEO
			(2) 024OEO, (1) 036OEO
			(2) 036OEO
	S_024	Heat Pump	(2) 024OWO
	S_048		(4) 024OWO
			(2) 024OWO, (1) 036OWO
			(2) 036OWO
Heat Pump	B_018	Heat Pump	024OWO
	B_024		036OWO
	B_030		
	B_036		048OWO

*OEO signifies a cooling-only fan coil unit, and OWO signifies a heat pump fan coil unit.

†Multi-split systems can accommodate up to 4 fan coil units of various types with one condensing unit. The combinations listed in Table 1 are those combinations which use only in-ceiling cassette units. Refer to system presale literature or Trade Prices for more details.

NOTES:

1. If your particular application requires a heat pump outdoor unit matched with a cooling-only fan coil unit, contact your local representative for more details.
2. Numbers in () indicate quantities when there is more than one fan coil unit in the system.

III. MOUNT FAN COIL UNIT IN CEILING

1. Remove enough ceiling panels to provide clearance space for mounting unit to ceiling joists. In some ceilings it may be necessary to temporarily remove sustaining T-bars.
2. Determine mounting method. On wooden beams, use field-supplied threaded rods, washers, and nuts to suspend support brackets. With metal structures, secure field-supplied threaded rods on an existing angle or install a new field-supplied support angle. On newly built concrete slabs, secure field-supplied threaded rods with inserts and embedded bolts. For previously built concrete slabs, install field-supplied hanging bolts with an expansion anchor. Refer to Fig. 4.
- a. Refer to Fig. 2 and 3 for distance between the holes for hanging brackets. Mark distance on the ceiling joists before drilling holes for securing rods to ensure they will line up with the holes on unit.
- b. Securely fasten $\frac{3}{8}$ -in. threaded rods to ceiling joists. Refer to Fig. 4.
- c. Place factory-supplied support bracket on the threaded rod $5\frac{1}{16}$ in. from false ceiling. Double-nut support brackets for safety. Install one field-supplied nut and washer above the support bracket. Make sure extension rods do not protrude down through bracket more than $\frac{3}{8}$ of an inch; otherwise, the unit cannot be easily attached to the bracket. Refer to Fig. 5.

NOTE: The final tightening of nuts and counter nuts on the support bracket should be done when all the connections are completed.

3. Secure and level fan coil unit.
 - a. Carefully lift unit at the 4 corners to insert it onto the support brackets. The unit may have to be inclined to be lifted over the sustaining T-bars (Fig. 6). After the unit is inserted onto the support bracket, *screw in safety screws*.
 - b. Place a carpenter's level on the unit. Refer to Fig. 7. A maximum slope of $\frac{1}{8}$ in. toward the condensate drain is allowed.
4. Unpack grille and grille frame.

NOTE: See Start-Up section for procedure that tests the drain pan condensate flow.

- a. On 024 units, mount grille frame using the 4 screws provided.

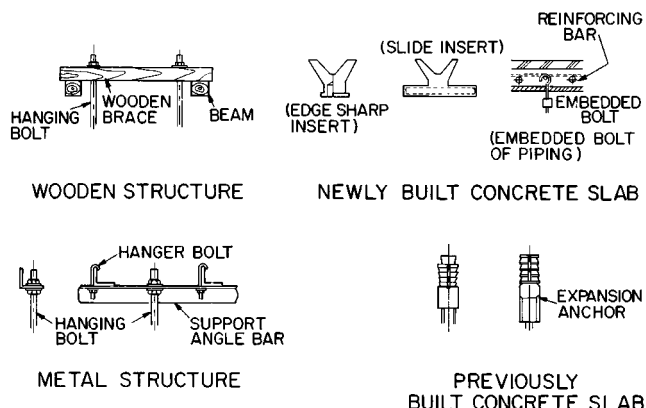


**Fig. 4 — Mounting Methods
(Hardware is Field Supplied)**

- b. On the 036 and 048 units that have a 2-piece frame, be sure to align and securely lock the dovetail (Fig. 8). Connect the frame with the 8 screws provided.

NOTE: On both units, the frame should align with the ceiling as shown in Fig. 9.

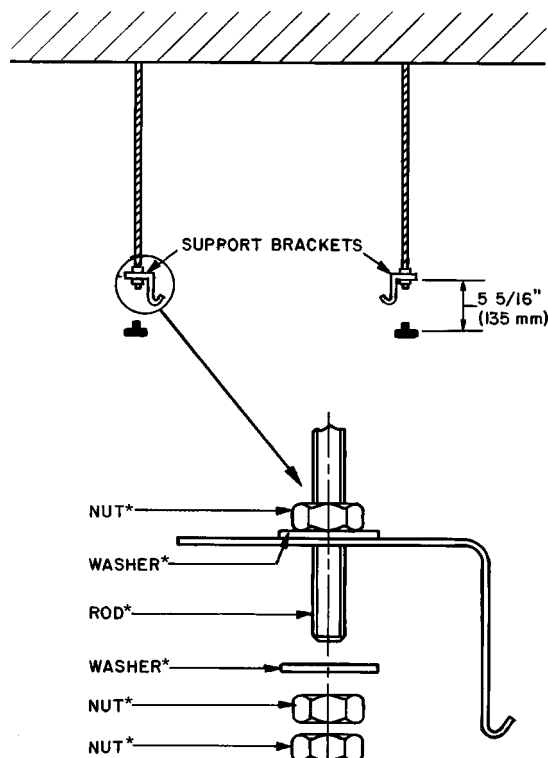
If alignment is incorrect, re-adjust height and re-level. If the unit is too high, do not use excessive force on frame mounting screws. However, internal gaskets must be sealed properly to prevent airflow between inlet and outlet. Make sure the grille frame lines up with the false ceiling. Also, make sure the grille frame gasket seals are against the ceiling, keeping the unconditioned air from entering the occupied space.

- c. Hang grille(s) on the support hooks, swing grille(s) up into the frame, and fasten by turning slotted screws.

IV. CONNECT REFRIGERANT PIPING

Fan coil units may be connected to outdoor units using field-supplied refrigerant grade piping. Refer to Tables 2-4 for the correct size piping. The length of refrigerant pipe depends on unit placement and building structure; be sure to run pipes as directly as possible. Use Steps 1-4 below to connect refrigerant piping.

1. Install insulation.
 - a. Insulate vapor line and liquid line (538S only) to prevent condensation. It is extremely important that the suction line and the AccuRater® metering device (538A and 538B systems only) be completely insulated. Use any acceptable heat-resistant, closed-cell foam insulation (minimum $\frac{3}{8}$ -in. wall thickness).
 - b. Cap piping ends.
 - c. Slide insulation over piping, or cut insulation and place over piping.



*Field supplied.

Fig. 5 — Support Bracket Installation

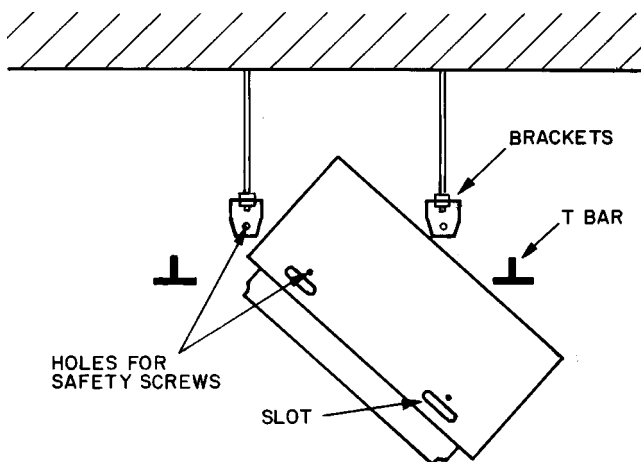


Fig. 6 — Unit Inclined for Insertion Over T-Bars

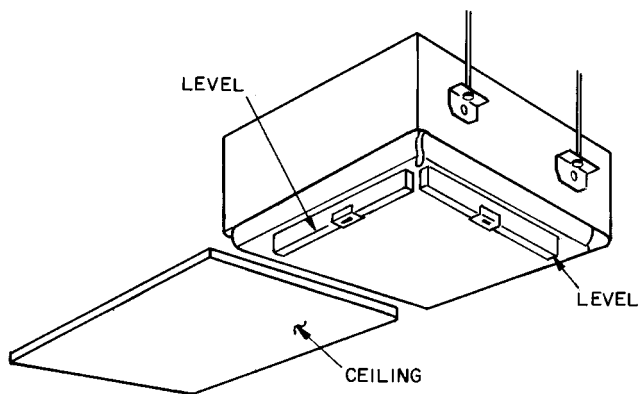


Fig. 7 — Level Unit

2. Run refrigerant piping.
 - a. Run pipes as directly as possible, avoiding any unnecessary turns and bends.
 - b. Suspend refrigerant pipes so that the insulation is not damaged and vibrations are not transmitted to the structure.
 - c. Leave slack in the refrigerant pipe between the structure and the unit to absorb vibrations.
 - d. Install flare connections at both liquid and vapor lines. When making these connections, slide flare nut onto the line, flare the line, and then connect.
 - e. Install flare coupling and AccuRater metering device (538A and 538B systems only) from accessory kit (Fig. 10) in liquid line at fan coil. Make sure arrow on metering device body points AWAY from the fan coil. Use Tables 5-7 to determine required piston size for the 538A or 538B system being installed.
 - f. On heat pump installations only, install a second piston in the AccuRater® metering device located in service valve on outdoor unit (Fig. 11). Make sure the Teflon seal on the piston faces toward the outdoor unit. Use Table 6 to determine required piston size for the system being installed. Piston is provided with outdoor unit.
 - g. Install filter drier provided with outdoor unit in the liquid line near the outdoor unit (538A and 538B only). Heat pump units use a bi-flow style filter drier.

NOTE: DO NOT install a filter drier on 538S systems.

h. Refer to outdoor unit Installation, Start-Up, and Service Instructions for additional outdoor unit installation information.

3. Insulate wall openings to reduce air infiltration and refrigerant piping vibrations on structure.
4. Evacuate piping if necessary. If either refrigerant piping or the indoor coil is exposed to atmospheric conditions the piping must be evacuated to 1000 microns to eliminate contamination and moisture in the system. Use accepted and responsible practices when evacuating and charging the system.

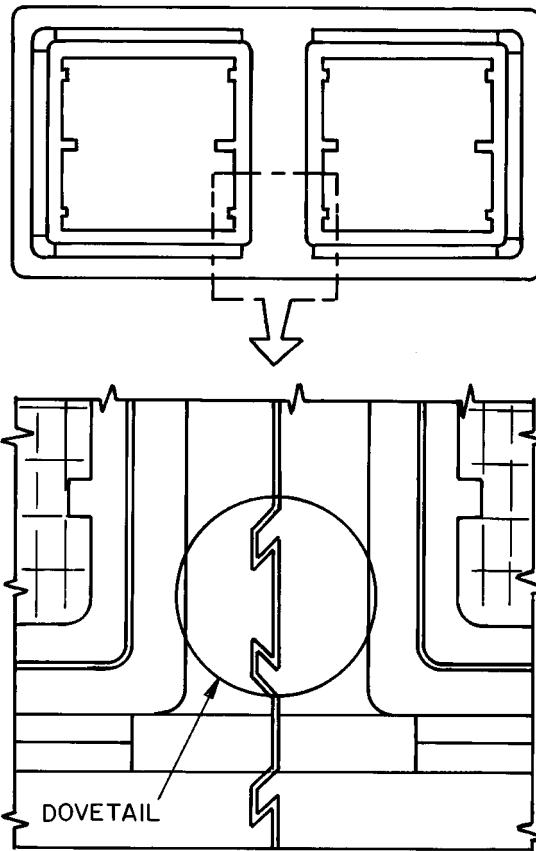


Fig. 8 — Dovetail Connection

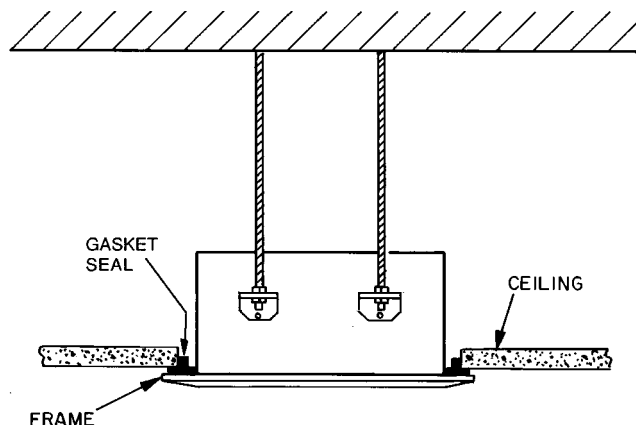
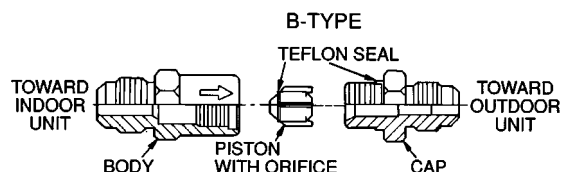


Fig. 9 — Line Up Frame with the Ceiling



NOTE: Install device with arrow pointing away from indoor fan coil unit.

Fig. 10 — AccuRater® Metering Device Installed in Liquid Line (Bypass Type Components)

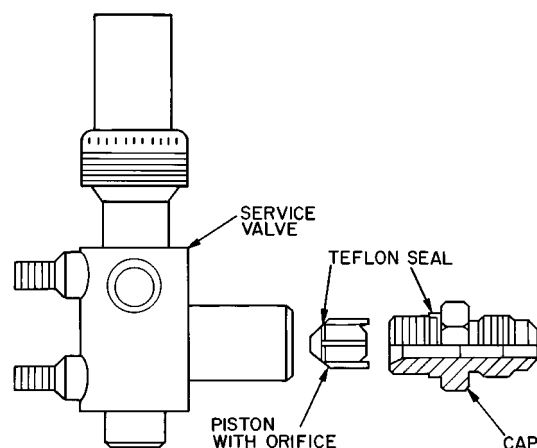


Fig. 11 — AccuRater Metering Device at Service Valve (Bypass Type Components)

Table 2 — Specifications, 619F Cooling Only Fan Coil Units Matched with 538A Outdoor Condensing Units*

UNIT 619F	024OEO	036OEO
NOMINAL CAPACITY (Tons)	1½	3
NOMINAL SIZE (Btuh)	18,000	36,000
OPERATING WEIGHT (Lb)	61.6	105.8
MOISTURE REMOVAL RATE (Pints/Hr)	7.0	9.6
FINISH	White	
REFRIGERANT Control (Cooling) System Charge Required (lb)†	R-22 AccuRater® Piston in Fan Coil	
	4.8	6.0
INDOOR FAN Rpm...Cfm High Rpm...Cfm Medium Rpm...Cfm Low High Speed Watts Motor (Quantity) Hp Blowers - No. ...Size (in.)	Direct Drive Centrifugal	
	1190...525 930...415 840...375 100 (1) ½ ₁₆ 1...10 x 8	970...915 790...745 635...635 180 (2) ½ ₁₆ 2...10 x 8
INDOOR COIL Face Area (sq ft) No. of Rows Fins/in. Circuits	Copper Tube, Aluminum Fin	
	2.66 3 14 4	5.67 2 14 4
FILTERS (Quantity) Size (in.)	Cleanable	
	(1) 16½ x 16½	(2) 16½ x 16½
AIRSWEEP	None	
CONTROLS Auto. Restart Fan Mode Control Voltage	24-v Thermostat Yes High/Medium/Low/—Auto./Continuous 24 v (provided)	
REFRIGERANT LINES Connection Type Liquid Line OD (in.) Vapor Line OD (in.) Maximum Length (ft) Maximum Lift (Fan Coil Above Outdoor) (ft) Maximum Lift (Fan Coil Below Outdoor) (ft)	Flare ⅜ 200 65 150	
CONDENSATE DRAIN CONNECTION	Hose	
CONDENSATE DRAIN SIZE (in.)	1.0	

*Contact your local representative for details regarding 538A condensing units matched with 619F heat pump fan coil units.

†Condensing units are shipped with the smallest applicable system charge. Refer to condensing unit nameplate for condensing unit factory charges. All charges are based on 25 ft of line. Additional system charge may be necessary depending on your application.

Table 3 — Specifications, 619F Heat Pump Fan Coil Units Matched with 538B Outdoor Heat Pump Units

UNIT 619F	024OWO	036OWO	048OWO
NOMINAL CAPACITY (Tons)	2	3	4
NOMINAL SIZE (Btuh)	24,000	30,000	36,000
OPERATING WEIGHT (Lb)	66.1	105.8	118.0
MOISTURE REMOVAL RATE (Pints/Hr)	7.0	9.6	9.6
FINISH	White		
REFRIGERANT Control (Cooling) Control (Heating) System Charge Required (lb)*	R-22 AccuRater® Piston in Fan Coil AccuRater Piston in Outdoor Unit 5.5 5.9 5.9		
INDOOR FAN Rpm...Cfm High Rpm...Cfm Medium Rpm...Cfm Low High Speed Watts Motor (Quantity) Hp Blowers - No. ...Size (in.)	Direct Drive Centrifugal 1190...525 970...915 1180...1100 930...430 790...745 920...880 840...400 635...635 830...680 100 160 180 (1) ½ ₁₆ (2) ½ ₁₆ (2) ½ ₁₆ 1...10 x 8 2...10 x 8 2...10 x 8		
INDOOR COIL Face Area (sq ft) No. of Rows Fins/in. Circuits	Copper Tube, Aluminum Fin 2.66 5.67 5.67 3 2 2 14 14 14 4 4 4		
FILTERS (Quantity)...Size (in.)	Cleanable (1)...16½ x 16½ (2)...16½ x 16½ (2)...16½ x 16½		
AIRSWEEP	None		
HEATER KW	1.8	2.7	2.7
CONTROLS Auto. Restart Warm Start Feature Defrost Method Freeze Protection Fan Mode Control Voltage	24-v Thermostat Yes Yes Time/Temperature Yes High/Medium/Low/—Auto./Continuous 24 v (provided)		
REFRIGERANT LINES Connection Type Liquid Line OD (in.) Vapor Line OD (in.) Maximum Length (ft) Maximum Lift (Fan Coil Above Outdoor) (ft) Maximum Lift (Fan Coil Below Outdoor) (ft)	Flare 5/8 3/8 3/4 200 65 150		
CONDENSATE DRAIN CONNECTION	Hose		
CONDENSATE DRAIN SIZE (in.)	1.0		

*Heat pump units are shipped with the smallest applicable system charge. Refer to heat pump unit nameplate for heat pump unit factory charges. All charges are based on 25 ft of line. Additional system charge may be necessary depending on your application.

V. CONNECT CONDENSATE DRAIN LINE

Observe all local sanitary codes when installing condensate drains.

1. Connect drain line by inserting the field-supplied hose connector on the condensate drain. Then place 1 in. rigid PVC pipe over the hose connector. Refer to Fig. 12.

CAUTION: The drain tube extension must be securely fastened to the condensate drain. Failure to do so can result in condensate water dripping onto the floor.

2. To ensure regular flow of condensate water, pitch the drain pipe toward open drain or sump at a downward slope. Refer to Fig. 12. Also, make sure that the line continually slopes with no rise or sags as shown in the lower right-hand side of Fig. 12.
3. Provide a trap of at least 2 in. near the end of the drain line to prevent odors from entering rooms. Refer to Fig. 12. Be sure line is not double trapped.

4. Insulate condensate drain line(s). Insulate the condensate drain line(s) that is located in or above an occupied area with a condensate-proof material such as polyurethane or neoprene.

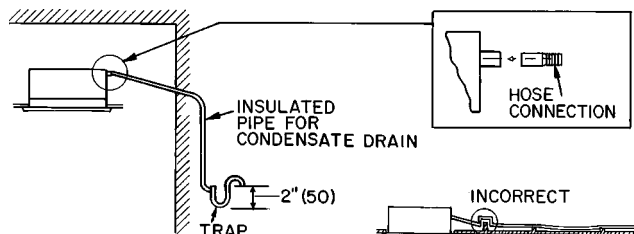


Fig. 12 — Drainage System

Table 4 — Specifications, 619F Cooling Only Fan Coil Units Matched with 538S Outdoor Multi-Split Condensing Units*

UNIT 619F	024OEO	036OEO
NOMINAL CAPACITY (Tons)	1½	2
NOMINAL SIZE (Btuh)	18,000	24,000
OPERATING WEIGHT (Lb)	61.6	105.8
MOISTURE REMOVAL RATE (Pints/Hr)	7.0	9.6
FINISH	White	
REFRIGERANT Control (Cooling) System Charge Required (lb)†	R-22 TXV in Condensing Unit 4.8	
INDOOR FAN Rpm...Cfm High Rpm...Cfm Medium Rpm...Cfm Low High Speed Watts Motor (Quantity) Hp Blowers - No. ...Size (in.)	Direct Drive Centrifugal 1190...525 930...415 840...375 100 (1) ½ ₁₆ 1...10 x 8	
INDOOR COIL Face Area (sq ft) No. of Rows Fins/in. Circuits	Copper Tube, Aluminum Fin 2.66 3 14 4	
FILTERS (Quantity) Size (in.)	Cleanable (1) 16½ x 16½ (2) 16½ x 16½	
AIRSWEEP	None	
CONTROLS Auto. Restart Fan Mode Control Voltage	24-v Thermostat Yes High/Medium/Low/—Auto./Continuous 24 v (provided)	
REFRIGERANT LINES Connection Type Liquid Line OD (in.) Vapor Line OD (in.) Maximum Length (ft) Maximum Lift (Fan Coil Above Outdoor) (ft) Maximum Lift (Fan Coil Below Outdoor) (ft)	Flare ⅜ 50 30** 30**	
CONDENSATE DRAIN CONNECTION	Hose	
CONDENSATE DRAIN SIZE (in.)	1.0	

TXV — Thermostatic Expansion Valve

*Contact your local representative for details regarding 538S multi-split condensing units matched with 619F heat pump fan coil units.

†Condensing units are shipped with the smallest applicable system charge. All charges are based on 25 ft of line. Refer to condensing unit nameplate for condensing unit factory charges. Additional system charge may be necessary depending on your application.

**Maximum system lift is 30 ft between the lowest system component and the highest system component.

Table 5 — Required Piston Size for AccuRater® Metering Device, Cooling-Only Fan Coil Units

INDOOR UNIT 619F—	OUTDOOR UNIT 538A—	PISTON REQUIRED (Size)	REQUIRED SYSTEM CHARGE (lb)*
024OEO	018	52	4.8
036OEO	024	62	5.2
	030	63	5.2
	036	65	6.0

*Charge based on 25 ft of interconnecting tubing. Charge may need to be added for longer tubing runs or when used with certain fan coils. Check unit nameplate for required charge.

NOTES:

1. All pistons are Chattleff "B" type.
2. Service valves are front-seating type.

3. Outdoor condensing units are shipped with the smallest applicable system charge. All charges are based on 25 ft of line. Refer to condensing unit nameplate for factory charge. Additional charge may be necessary depending on your application.

Table 6 — Required Piston Size for AccuRater® Metering Device, Heat Pump Fan Coil Units

INDOOR UNIT 619F—	OUTDOOR UNIT 538B—	INDOOR PISTON SIZE (COOLING)	OUTDOOR PISTON SIZE (HEATING)	REQUIRED SYSTEM CHARGE (Lb)*
024OWO	018	51	49	5.5
036OWO	024	61	49	5.9
	030	63	55	5.9
048OWO	036	67	59	5.9

*Charge is based on 25 ft if interconnecting tubing. Charge may need to be added for longer tubing runs or when used with certain fan coils. Check unit nameplate for required charge.

NOTES:

1. All pistons are Chattleff “B” type.
2. Service valves are front-seating type.

3. Outdoor heat pump units are shipped with the smallest applicable system charge. All charges are based on 25 ft of line. Refer to heat pump nameplate for factory charge. Additional charge may be necessary depending on your application.

Table 7 — Required Piston Size for AccuRater Metering Device, Cooling-Only Condensing Units With Heat Pump Fan Coil Units

INDOOR UNIT 619F—	OUTDOOR UNIT 538A—	PISTON REQUIRED (Size)	REQUIRED SYSTEM CHARGE (Lb)*
024OWO	018	51	5.7
036OWO	036	65	7.5

*Charge is based on 25 ft if interconnecting tubing. Charge may need to be added for longer tubing runs or when used with certain fan coils. Check unit nameplate for required charge.

NOTES:

1. All pistons are Chattleff “B” type.
2. Service valves are front-seating type.

3. Outdoor condensing units are shipped with the smallest applicable system charge. All charges are based on 25 ft of line. Refer to condensing unit nameplate for factory charge. Additional charge may be necessary depending on your application.

VI. MAKE ELECTRICAL CONNECTIONS

Be sure field wiring complies with local building codes and NEC. Also, check that unit voltage is within limits as shown in Table 8 for permissible operating limits. See Troubleshooting section on page 14 for wiring diagrams.

Contact local power company for correction of improper line voltage or phase imbalance.

⚠ WARNING: To avoid personal injury or damage to unit, do not make electrical connections until all power sources are shut down, locked out and tagged. Failure to do so could result in personal injury or unit damage.

⚠ CAUTION: Operation of unit on improper line voltage constitutes abuse and could affect warranty. Refer to Table 8 for permissible operating limits. Do not install unit in system where voltage may fluctuate above or below permissible limits.

1. With the 2 screws provided, attach the electrical control panel (Fig. 13) to the fan coil unit as shown in Fig. 2 and 3.
2. Route line power leads from indoor disconnect to the fan coil unit.
 - a. Run wiring through top hole on right side of control panel (Fig. 13).
 - b. Using Fig. 14 and appropriate wiring diagrams (see Troubleshooting section on page 14), connect power from disconnect wire to high voltage terminal board (TB1) and ground.

NOTE: Indoor disconnect should be within sight and readily accessible from the unit per NEC. Do not route the power leads from outdoor unit.

3. Route line power leads from indoor disconnect to the fan coil unit for power to heaters (if required).

NOTE: If unit is equipped with electric heaters, the power source must be from an approved NEC disconnect and connected directly to contactor in control box.

- a. Run wire from disconnect to fan coil unit. Refer to Table 8 for recommended fuse and wire sizes.
- b. Place wire through bottom hole on the right hand side of electric control panel (Fig. 13). Using Fig. 14 and the appropriate wiring diagram (see Troubleshooting section on page 14), connect disconnect wire to heater contactor.

NOTE: Units equipped with electric heaters have an automatic safety thermostat set to 163 ± 6 F. If tripped, this safety device will reset automatically, but the cause should be investigated. (For example, a low airflow due to dirty inlet filter.)

4. Install wall-mounted thermostat and control power wiring.

⚠ CAUTION: Do not short circuit the 619F, 60-v transformer. It is fused. The transformer can be short circuited by connecting wrong wires or by touching a live wire to the side of the grounded control box.

- a. Place thermostat in same room as fan coil unit. Make sure the thermostat is away from the direct air discharge.
- b. Using Fig. 15, run 24-v control wires from outdoor unit to indoor unit and to the thermostat. Units are factory wired for 230/24-v transformer operation. For 208/24-v operation, interchange blue (208-v) and red (240-v) wires at the primary connection. Cap unused wires with wire nuts.
- c. At the fan coil unit, connect 24-v control wire to (TB2) as shown on Fig. 15 and the appropriate wiring diagram (see Troubleshooting section on page 14).

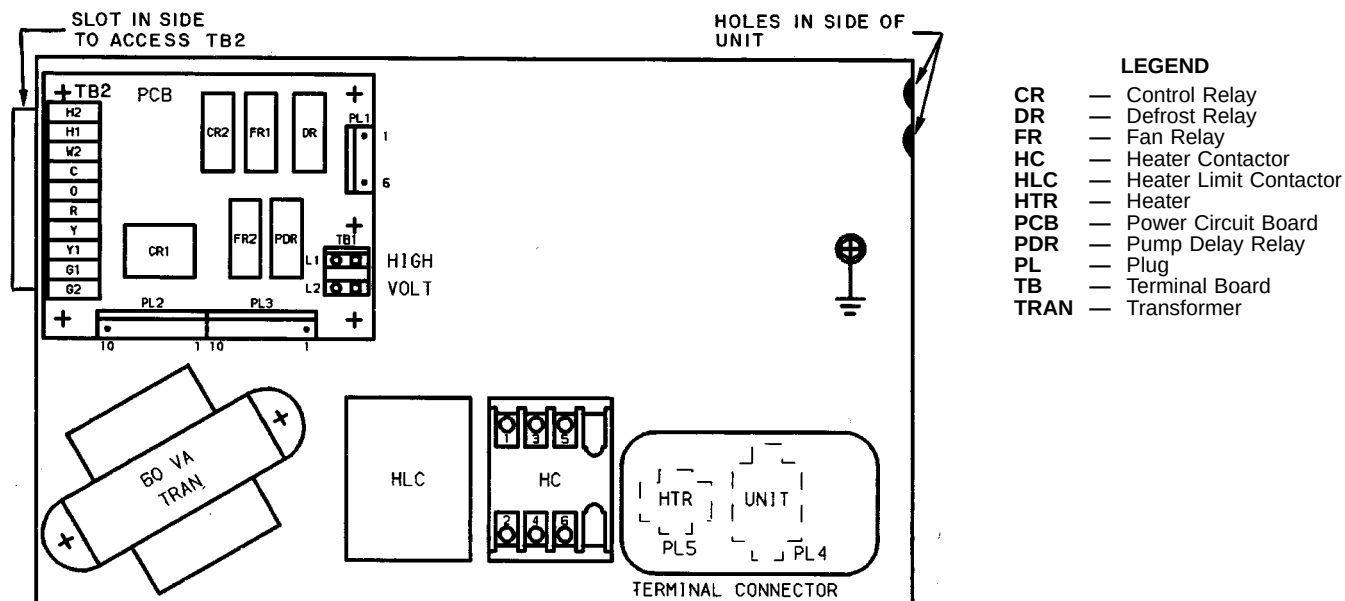


Fig. 13 — Electrical Control Panel

Table 8 — Electrical Data

UNIT 619F _—	V-PH-Hz	OPERATING VOLTAGE MINIMUM*	OPERATING VOLTAGE MAXIMUM*	FAN FLA (ea)	HEATER		POWER			MINIMUM WIRE SIZE (AWG)
					kW	FLA	MCA	MOCP	FLA	
024OEO†	208/230-1-60	187	253	0.44	—	—	0.55	15	0.44	14
036OEO†				0.44	—	—	1.10	15	0.88	14
024OWO**				0.44	1.80††	7.50	6.00/ 7.50	15/15	7.94	14/14
036OWO**				0.78	2.70††	11.25	10.00/15.00	15/15	12.80	14/14
048OWO**				1.04	2.70††	11.25	10.00/15.00	15/15	12.03	14/14

LEGEND
 AWG — American Wire Gage
 FLA — Full Load Amps
 MCA — Minimum Circuit Amps
 MOCP — Maximum Overcurrent Protection Amps
 (Fuse or HACR Circuit Breaker)

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

†Cooling only fan coil units.

**Heat pump fan coil units.

††Separate heater and unit circuits required.

||Unit only/unit plus heater.

NOTE: Heater capacity (kW) is based on heater voltage of 240 v. If power distribution voltage to unit varies from rated heater voltage, heater kW will vary accordingly.

5. Connect heater and unit plugs.

- Using Fig. 13 and the appropriate wiring diagram (see Troubleshooting section on page 14), connect unit plug (PL4) from control box to mating fan coil plug.
- Connect heater plug (PL5) from control box to mating fan coil plug.

VII. ADJUST LOUVERED DISCHARGE DIFFUSERS

A. Heating and Cooling

Direct diffusers so air blows outward across the ceiling (Fig. 16).

B. Redistribute Airflow

Close one or two diffusers.

CAUTION: Never close more than two diffusers on fan coil or the effectiveness of the safety devices will be limited. Refer to Fig. 17.

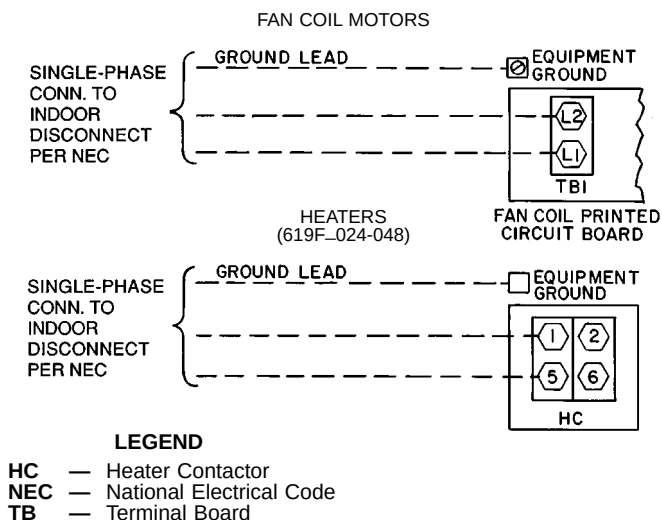
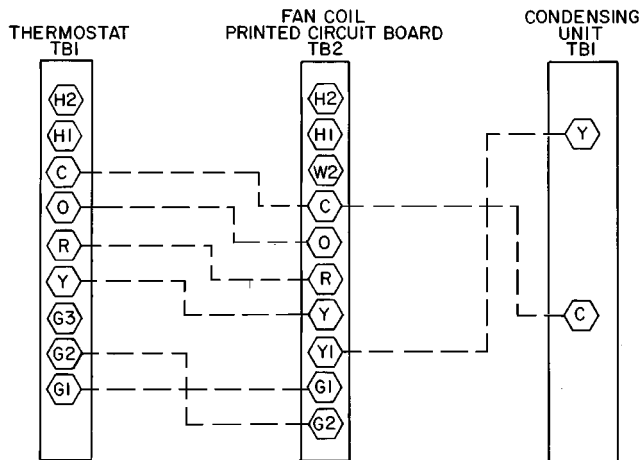
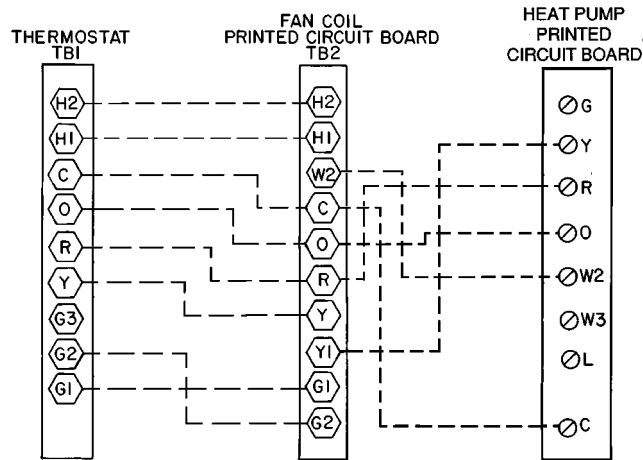


Fig. 14 — Line Power Leads

CONDENSING UNIT



HEAT PUMP UNIT



LEGEND

TB — Terminal Block
 ---- Field Wiring

Fig. 15 — Control Circuit Connections

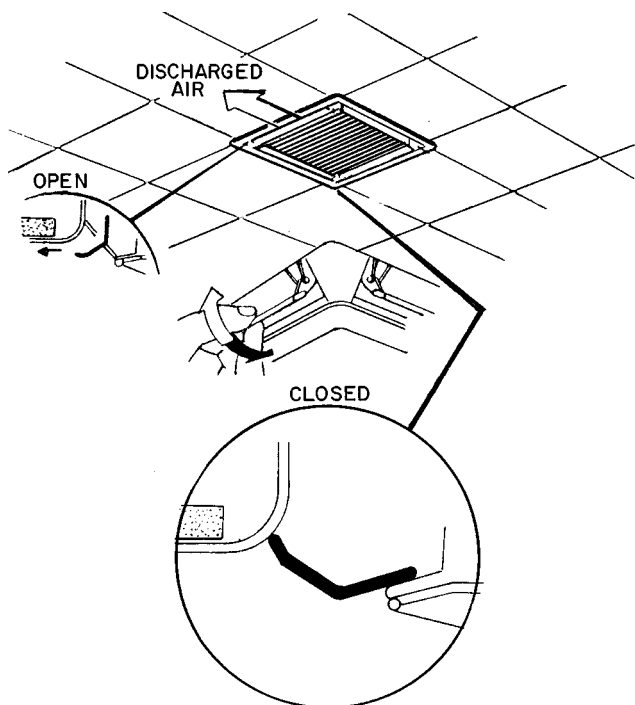
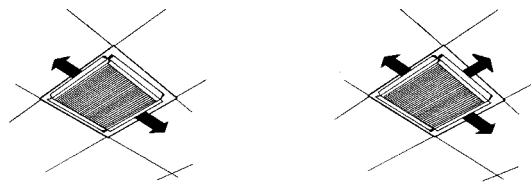
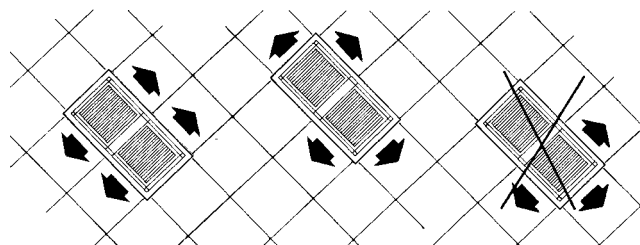


Fig. 16 — Diffuser Adjustments

NOTE: If a fan coil unit must be placed in a ceiling against a wall, close the diffuser on the wall side before installing fan coil unit. Also, to take advantage of the unit's flexibility, the ventilated air option or conditioned air option can be used. Depending on the length and restrictions of the ductwork, one or 2 discharge diffusers may have to be closed. Refer to the Installation Options section on page 13 for detailed instructions.



619F024 — Only 1 or 2 diffusers may be closed.



619F036,048 — A maximum of 2 diffusers may be closed.

Fig. 17 — Closing Diffusers

START-UP

Make the following checks and complete the Start-Up Checklist on page CL-1 before system start-up. Refer to outdoor unit Installation, Start-Up, and Service manual for system start-up instructions and refrigerant charging methods. Be sure to use the system refrigerant charge shown in Tables 2-4 or on the outdoor unit nameplate.

1. Check condensate drainage system.
 - a. Remove grille(s) and frame from the unit.
 - b. On the opposite side of the drain connection, insert a water bottle up into the fan coil unit and fill drain pan. Refer to Fig. 18. Water must flow regularly with condensate pump energized. If water does not, check the pipe slope or see if there are any pipe restrictions.
2. Make sure that all wiring connections are correct and that they are tight.
3. Make sure that all barriers, covers, and panels are in place.

NOTE: The unit is equipped with a safety float switch to deenergize the compressor if the drain water level gets too high.

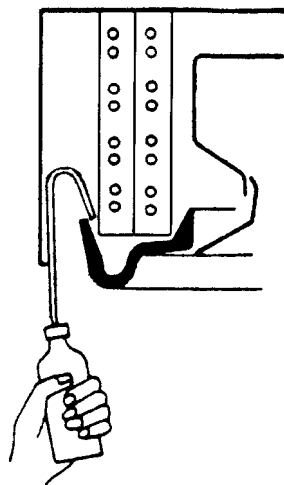


Fig. 18 — Inserting Water into Drain Pan

4. Ensure that the filters and return air grilles have been installed and that the discharge louvers are correctly positioned.

⚠ WARNING: Never operate unit without a filter or with grille(s) removed. Damage to the unit or personal injury may result.

SERVICE AND MAINTENANCE

Remove unit grille(s), filter(s), and condensate pan for cleaning, lubricating, or replacing parts.

⚠ WARNING: To avoid personal injury or damage to unit, do not service until all power sources are shut down, locked out, and tagged. Failure to do so could result in personal injury or unit damage.

I. MINIMUM MAINTENANCE

1. Check, clean, or replace air filter(s) each month or as required.
2. Check cooling coil, drain pan, condensate trap, and condensate drain pan each cooling season for cleanliness. Clean as necessary.
3. Check fan motor and wheel for cleanliness each heating and cooling season.
4. Check electrical connections for tightness and controls for proper operation each heating and cooling season. Service as necessary.

II. SERVICING

A. To Clean Or Replace Return-Air Filters

1. Open intake grille(s) by turning screws as shown in Fig. 19.
2. Slide filter(s) out.
3. Vacuum clean or wash filter(s) with soapy water. Rinse and let air dry. If filter needs replacing, filters are available from the local dealer.

⚠ CAUTION: If air filter is not replaced in the unit, dust and dirt gather in air conditioner and operation becomes impaired.

B. To Clean Or Replace Drain Pan

1. Place a plastic sheet on the floor to catch any water that may spill from drain pan.
2. Remove the air intake and distribution assembly. Remove the condensate water in the drain pan by pulling out the rubber drain plug (Fig. 20) and letting water drain into a 3-gallon bucket.

⚠ CAUTION: Do not use a screw driver to pry drain pan out of assembly. It could damage the pan.

3. Remove screws holding the drain pan. On size 024, there are 4 screws, and on sizes 036 and 048 there are 6 screws. Carefully hold the drain pan to remove it from the assembly.
4. After cleaning, re-install the drain pan using the appropriate number of screws. Center and align the metal fan inlet orifice (Fig. 20) with the fan. Ensure the fan spins freely.

INSTALLATION OPTIONS

The 619F provides for the field addition of air conditioning to an adjacent room or fresh air ventilation. Fresh air ventilation and power ventilation kits are available from your local representative. Plan your installation carefully. Before you begin, measure carefully, and follow acceptable building practices and NEC.

I. VENTILATION AIR OPTION

1. Using Fig. 2 or 3, locate and remove the factory-installed insulation from the side of the unit where the prepunched knockouts are located.
2. Remove the prepunched knockouts for fresh air intake using a punch or other similar tool. Refer to Fig. 21. Be careful not to damage internal parts such as the heat exchanger coil.

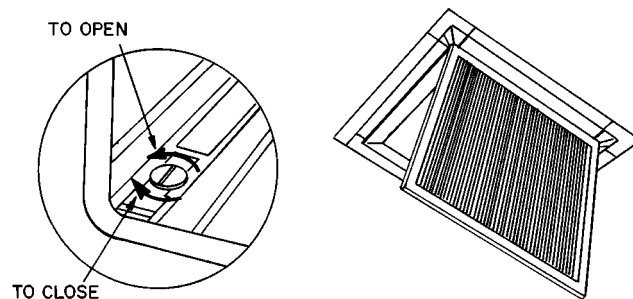


Fig. 19 — Intake Grille Slotted Screws

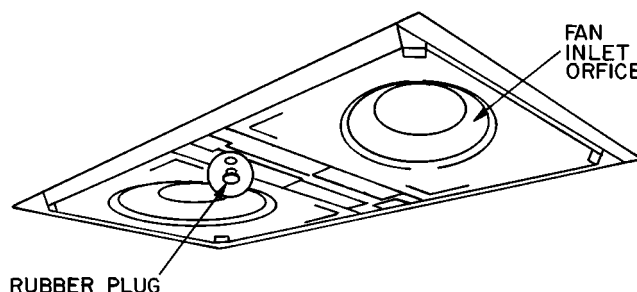
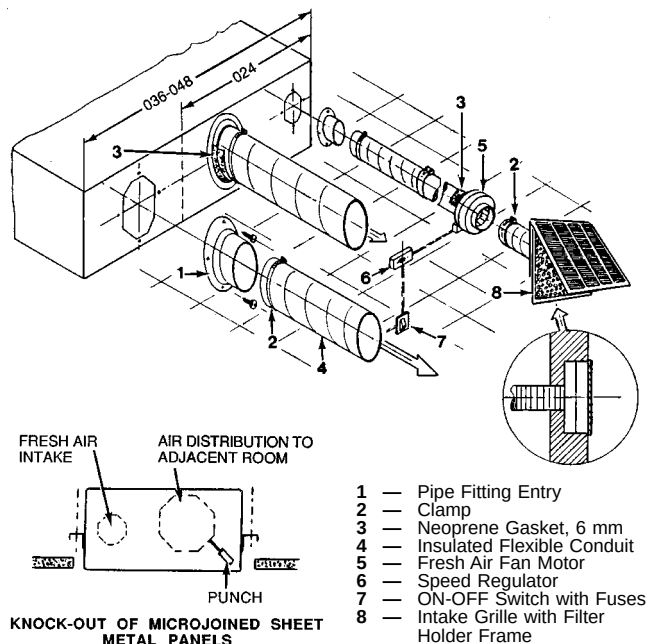


Fig. 20 — Drain Plug

3. Install ductwork using field-supplied, insulated flex duct, or insulated sheet metal suitable for working temperatures up to 155 F.
4. Use Fig. 22 and Table 9 to determine the allowable static pressure loss for the ductwork airflow. The ductwork design must not exceed this value or the job airflow requirements will not be met.
5. Use an accessory power ventilation kit if fresh air ventilation airflow does not meet job requirements. Refer to Fig. 21. Refer to accessory installation instructions (included with the accessory) for details on installing kit.

IMPORTANT: Ventilated air must not exceed 20% of the total airflow or improper unit operation will result.

6. Install a field-supplied filter and grille on outside wall at fresh air intake. Refer to Fig. 21.



NOTE: Unit is shown with grille up.

Fig. 21 — Field Addition of Air Ventilation or Air Conditioning to an Adjacent Room

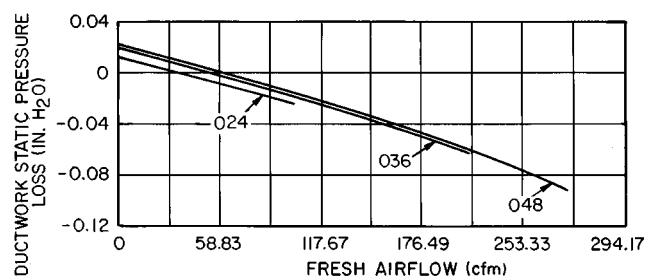


Fig. 22 — Fresh Airflow for Fan Coil Units

Table 9 — Maximum 619F Fan Coil Unit Airflow and Maximum Outdoor-Air Airflow

OUTDOOR UNIT	INDOOR UNIT SIZE	MAXIMUM* FAN COIL UNIT AIRFLOW (Cfm)	MAXIMUM* OUTDOOR-AIR AIRFLOW (Cfm)†
538A,538S	024	525	105
	036	915	183
538B	024	525	105
	036	915	176
	048	1100	220

*With fan on high speed.

†Maximum outdoor airflow is 20% of total fan coil unit airflow. Outdoor airflow is accomplished using accessory power ventilation kit.

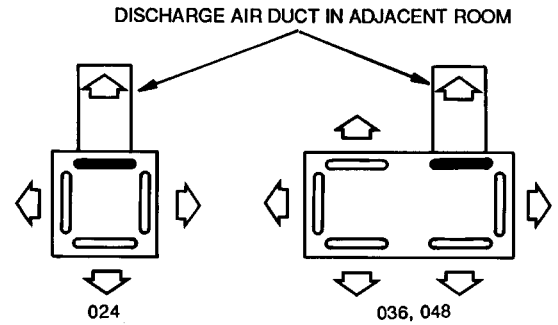
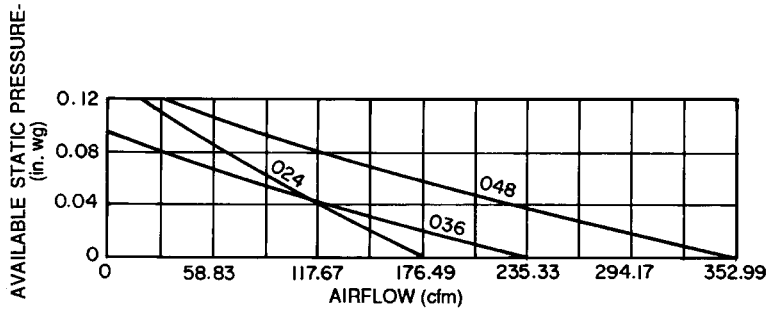
II. ALTERNATE LOCATION (NEXT ROOM) COOLING/HEATING OPTION

1. Follow Ventilation Air Option, Steps 1-6. Refer to Fig. 2 and 3 for location of prepunched knockouts.
2. Completely insulate all ductwork to prevent condensation.
3. Close one or two discharge diffusers on the unit to increase the airflow to the adjacent room. See Fig. 17 and Fig. 23.
4. Provide a path for return air. See Fig. 23 for examples.

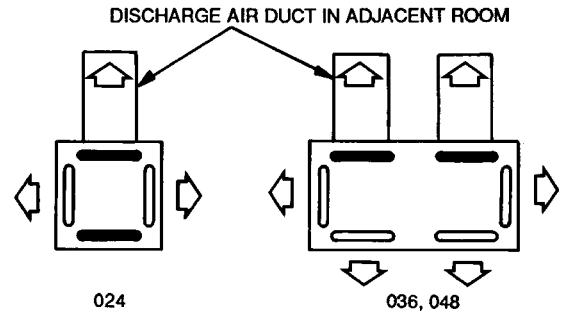
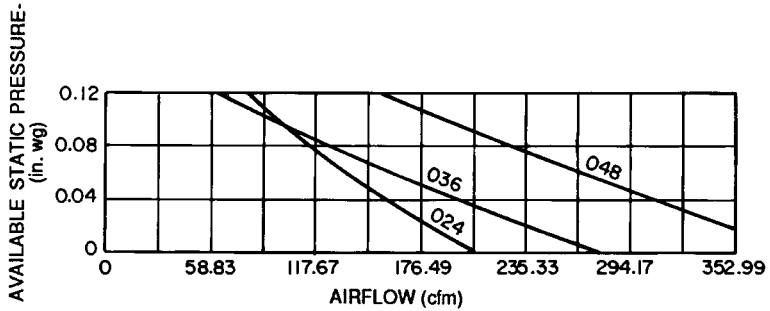
TROUBLESHOOTING

Refer to Fig. 24-27 for typical system wiring information to assist in troubleshooting the duct-free in-ceiling cassette cooling and heat pump systems using in-ceiling cassette fan coil units. For details on multi-split (538S) outdoor unit wiring, refer to multi-split outdoor unit installation instructions.

ONE DIFFUSER CLOSED



TWO DIFFUSERS CLOSED



PATH FOR RETURN AIR

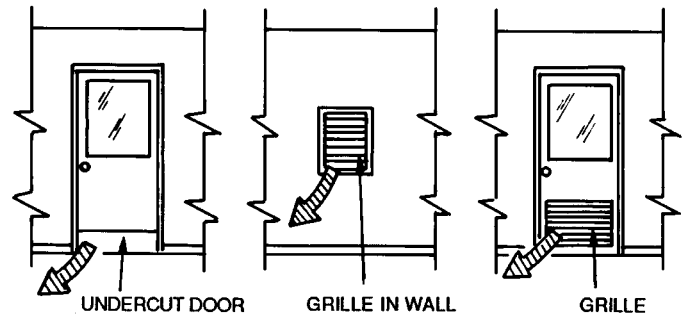
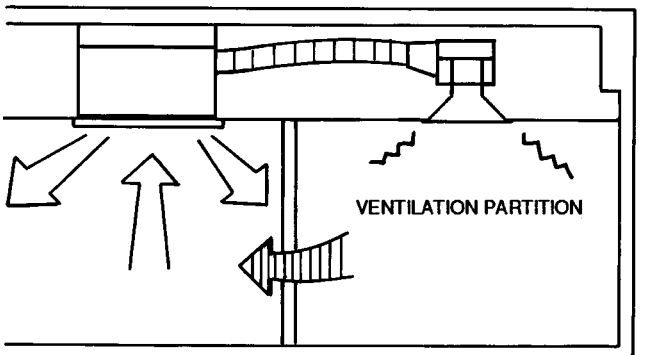
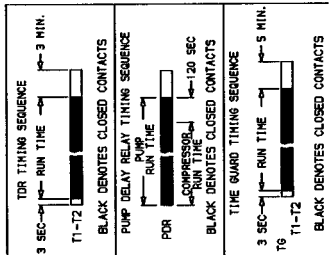


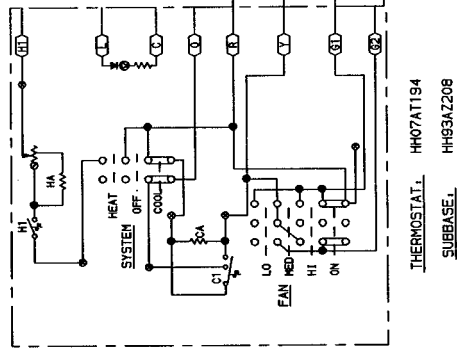
Fig. 23 — Static Capability and Design Considerations

RELAY CHART			
INDOOR FAN	HIGH	FR2	
INDOOR FAN	MED	FR1	FR2
INDOOR FAN	LOW	FR1	FR2



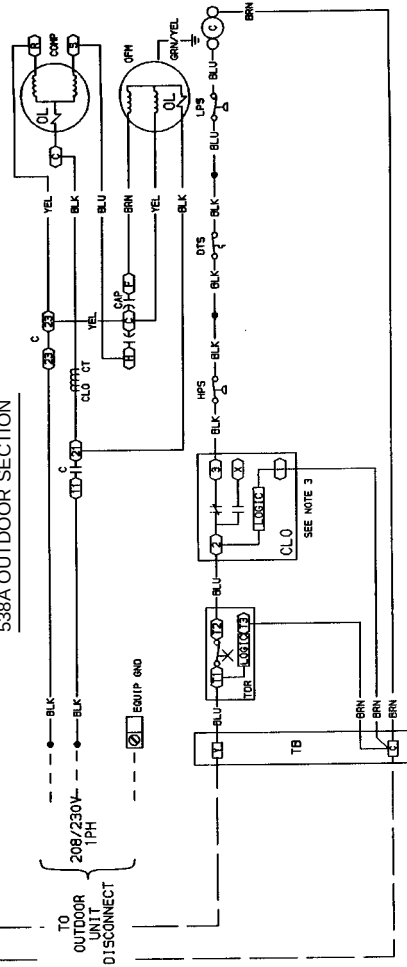
LEGEND

- CA Contactor
- CAP Cooling Anticipator
- CAP Capacitor
- CLO Compressor Lockout
- COMP Compressor Motor
- CR Control Relay
- CT Current Transformer
- DR Defrost Relay
- EQUIP Equipment
- FPT Freeze Protection Thermostat
- FR Fan Relay
- GND Ground
- HA Heat Anticipator
- HPS High Pressure Switch
- LPS Low Pressure Switch
- LS Limit Switch
- OCT Outdoor Coil Thermistor
- TH Outdoor Fan Motor
- OL Overload
- PCB Printed Circuit Board
- PDR Pump Delay Relay
- PL Plug
- PM Pump Motor
- PSS Pump Shutoff Switch
- TB Terminal Block
- TDR Time Delay Relay
- TG Time Guard
- TRAN Transformer



- Terminal (PCB, Field)
- Terminal (PCB, Factory)
- Terminal (Marked)
- Terminal (Unmarked)
- Terminal Block
- Splice
- Factory Wiring
- Field Control Wiring
- Field Power Wiring
- Option or Accessory Wire
- Circuit Board Trace

538A OUTDOOR SECTION



NOTES:

1. Compressor and fan motors are thermally protected.
2. Wire in accordance with National Electrical Code (NEC) and local codes. Replace any original wires with 90° C wire or its equivalent.
3. The CLO locks out the compressor to prevent short cycling on compressor overloads and safety devices. Before replacing CLO, check these devices. Minimum one amp turn required to hold contacts closed.
4. Transformer wired for 230 v. If 208 v, rewire red wire to blue tap on transformer.

Fig. 24 — Typical Cooling-Only Condensing Unit Matched With a Cooling-Only Fan Coil Unit System Wiring

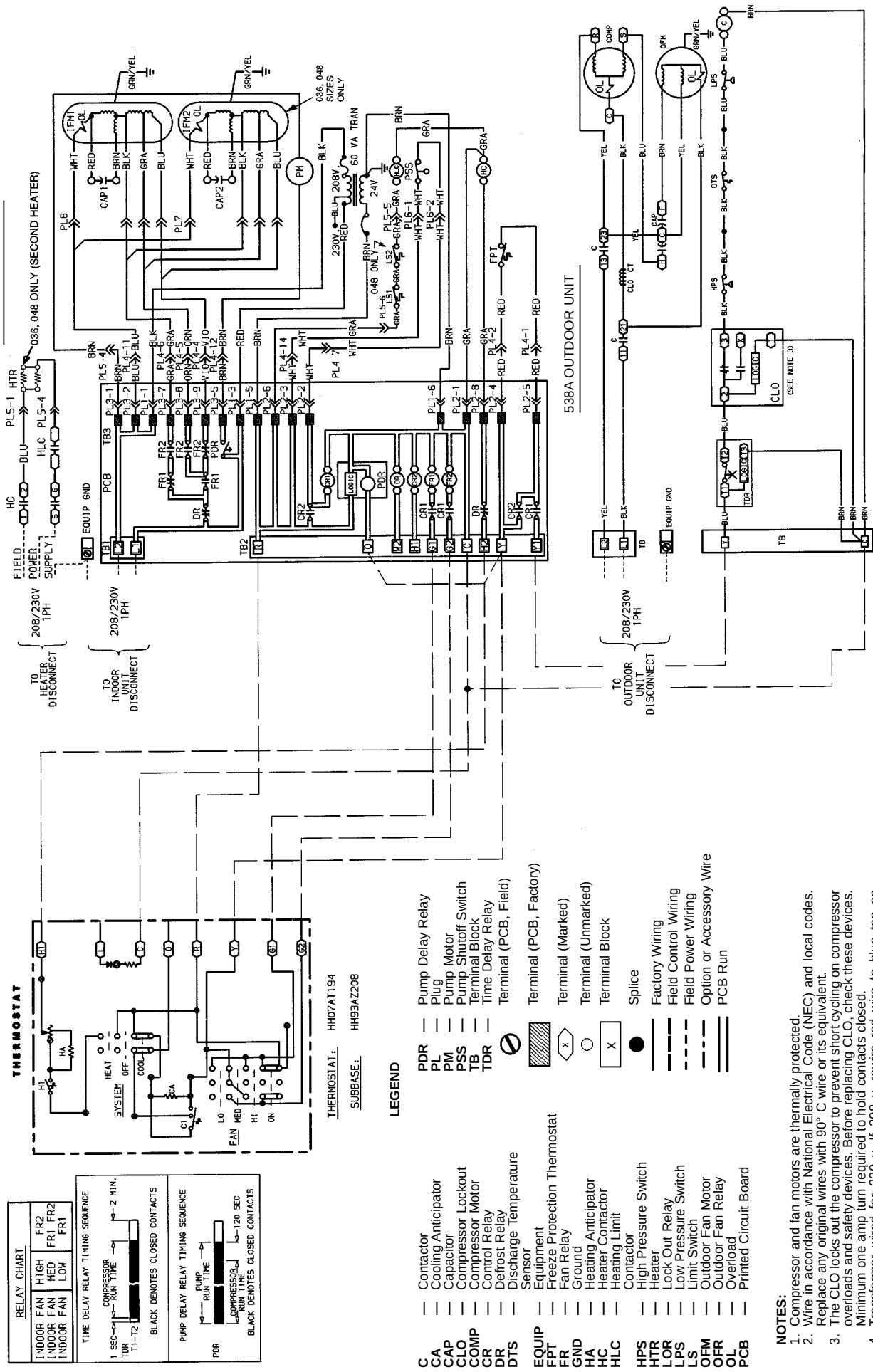


Fig. 26 — Typical Cooling-Only Condensing Unit Matched With a Heat Pump Fan Coil Unit System Wiring

- NOTES:**
1. Compressor and fan motors are thermally protected.
 2. Wire in accordance with National Electrical Code (NEC) and local codes. Replace any original wires with 90° C wire or its equivalent.
 3. The CLO locks out the compressor to prevent short cycling on compressor overloads and safety devices. Before replacing CLO, check these devices. Minimum one amp turn required to hold contacts closed.
 4. Transformer wired for 230 v. If 208 v, rewire red wire to blue tap on transformer.
 5. Heating contactor energizes electric heater in fan coil. Heater requires separate power source of electrical power.

START-UP CHECKLIST

I. PRELIMINARY INFORMATION

OUTDOOR UNIT: MODEL NO. _____ SERIAL NO. _____

OUTDOOR UNIT: MODEL NO. _____ SERIAL NO. _____

ACCESSORIES: _____

PISTONS (538A AND 538B SYSTEMS ONLY): INDOOR SIZE: _____

OUTDOOR SIZE (538B SYSTEMS ONLY): _____

REFRIGERANT PIPING: EQUIVALENT LINE LENGTH: _____ (IF OVER 50 FT*)

LIFT: FAN COIL ABOVE OUTDOOR UNIT (IF OVER 25 FT)*? _____

FAN COIL BELOW OUTDOOR UNIT (IF OVER 25 FT)*? _____

*APPLIES ONLY TO 538A AND 538B UNITS USING LONG-LINES APPLICATIONS

PRE-START-UP

INDOOR UNIT (REFER TO OUTDOOR UNIT INSTALLATION INSTRUCTIONS FOR OUTDOOR UNIT
PRE-START-UP FUNCTIONS)

IS THERE ANY SHIPPING DAMAGE? _____

IF YES, WHERE? _____

WILL THIS DAMAGE PREVENT UNIT START-UP? _____

CHECK POWER SUPPLY. IS IT 208/230, SINGLE PHASE? _____

HAS GROUND WIRE BEEN CONNECTED? _____

HAS THE CORRECT SIZE FUSE OR HACR BREAKER BEEN PROVIDED? _____

ARE POWER WIRES TO THE UNIT SIZED AND INSTALLED PROPERLY? _____

IS THE DISCONNECT SWITCH INSTALLED IN SIGHT FROM THE UNIT? _____

IS THE LOW-VOLTAGE CABLE (INDOOR TO OUTDOOR UNIT) RUN AND CONNECTED PROPERLY? _____

HAS CONDENSATE DRAIN BEEN RUN, SLOPED, AND TRAPPED PROPERLY? _____

IS AIR FILTER(S) IN PLACE? _____

IS UNIT MOUNTED LEVEL? _____

IS COOLING PISTON INSTALLED, THE CORRECT SIZE, AND IN THE CORRECT DIRECTION
(538A AND 538B SYSTEMS ONLY)? _____

IS HEATING PISTON INSTALLED, THE CORRECT SIZE, AND IN THE CORRECT DIRECTION
(538B SYSTEMS ONLY)? _____

PIPING

IS A LIQUID LINE SOLENOID INSTALLED IF REQUIRED BY LONG-LINE APPLICATIONS
(538A AND 538B SYSTEMS ONLY)? _____

IS FILTER DRIER INSTALLED AT THE OUTDOOR UNIT? _____

HAVE LEAK CHECKS BEEN MADE AT THE COMPRESSOR, OUTDOOR UNIT, FLARE CONNECTIONS, FILTER DRIERS,
AND FUSIBLE PLUGS WITH A LEAK DETECTOR? _____

HAS PIPING SYSTEM BEEN EVACUATED TO 1000 MICRONS (IF REQUIRED)? _____

HAS SYSTEM CHARGE BEEN WEIGHED IN? _____

HAVE SERVICE VALVES BEEN FULLY BACKSEATED? _____

CHECK VOLTAGE: IS VOLTAGE WITHIN RANGE SHOWN FOR UNIT (WITH UNIT OPERATING)?
OUTDOOR _____ INDOOR _____

START-UP

IF UNIT HAS A CRANKCASE HEATER, HAS IT BEEN ON FOR 24 HOURS? _____

MEASURE AND RECORD THE:

AIR ENTERING OUTDOOR UNIT: _____ F

AIR ENTERING INDOOR UNIT: _____ F

DISCHARGE LINE TEMPERATURE: _____ F

VAPOR LINE TEMPERATURE: _____ F

MEASURE AND RECORD THE:

VAPOR LINE PRESSURE: _____ PSIG

DISCHARGE PRESSURE: _____ PSIG

CUT ALONG DOTTED LINE