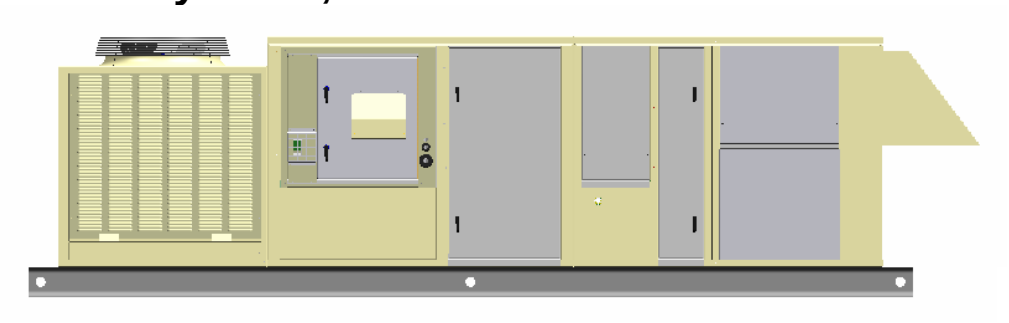
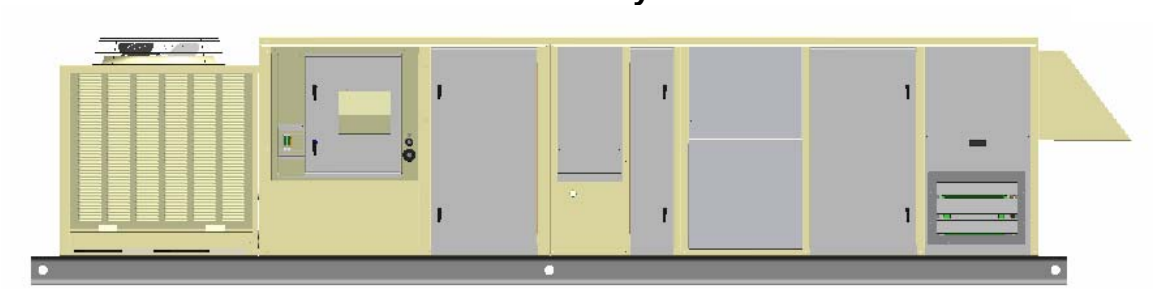
INSTALLATION OPERATION and MAINTENANCE MANUAL

High Efficiency Packaged Models DC Series B, Air Conditioning Systems, Model Sizes 036 Thru 420



R410A

No Heat Recovery Cabinet



Extended Heat Recovery Cabinet

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⚠ WARNING: READ SAFE OPERATION RULES AND MANUAL CAREFULLY

Insert for all ADDISON® product manuals

Instructions:

In accordance with California Proposition 65 requirements, place enclosed label(s) in a highly visible location on outside of equipment to be repaired (i.e., near equipment's serial plate). See label placement drawing in equipment's Installation, Operation and Service manual for label location (when available). Avoid placing label on areas with extreme heat, cold, corrosive chemicals or other elements. Extra labels are also included where repair of multiple units is involved. To order additional labels, please call +1.407.292.4400.

To obtain a copy of the manual or for more information, visit the applicable website(s) below:

Incluya en todos los Manuales de productos de ADDISON®

Instrucciones:

De conformidad con los requerimientos de la Propuesta 65 de California, ubique la(s) etiqueta(s) adjunta(s) en un lugar bien visible en el exterior del equipo a ser reparado (es decir, cerca de la placa serial). Ver dibujo de instalación de la etiqueta en el Manual de Operaciones y Mantenimiento (si esta disponible). Evite colocar la etiqueta en áreas con calor, frío, productos químicos corrosivos u otros elementos. Se incluyen etiquetas adicionales para el caso de reparación de varias unidades. Para ordenar etiquetas adicionales, por favor llamar al +1.407.292.4400.

Para obtener una copia del manual o para obtener mas información visite los sitios Web correspondientes a continuación.

www.addison-hvac.com

⚠WARNING

This equipment, its related accessories and by-products of operation, contain chemicals known to the State of California to cause cancer and birth defects or other reproductive harm.

⚠ADVERTENCIA

Este equipo, sus accesorios y los productos derivados de su operación contienen productos quimicos que el Estado de California considera causantes de cáncer y defectos de nacimiento u otros daños reproductivos.

Printed in U.S.A./Impreso en EE.UU P/N 91070015 Orig

Installation Code and Annual Inspections: All installation and service of ADDISON® equipment must be performed by a contractor qualified in the installation and service of equipment sold and supplied by Addison and conform to all requirements set forth in the ADDISON® manuals and all applicable governmental authorities pertaining to the installation, service, operation and labeling of the equipment. To help facilitate optimum performance and safety, Addison recommends that a qualified contractor conduct, at a minimum, annual inspections of your ADDISON® equipment and perform service where necessary, using only replacement parts sold and supplied by Addison.
Further Information: Applications, engineering and detailed guidance on systems design, installation and equipment performance is available through ADDISON® representatives. Please contact us for any further information you may require, including the Installation, Operation and Service Manual.
This product is not for residential use.
This document is intended to assist licensed professionals in the exercise of their professional judgment.

Código de Instalación e Inspecciones Anuales: Todas las instalaciones y mantenimientos de productos ADDISON® deben ser realizados sólo por personal cualificado en la instalación y mantenimiento de los equipos vendidos y suministrados por Addison y/o por sus distribuidores y deben cumplir con todos los requisitos dispuestos en los manuales de ADDISON® y con todos los estándares locales aplicables a la instalación, mantenimiento, funcionamiento y etiquetado del equipo. Para conseguir un funcionamiento óptimo y seguro, Addison recomienda que un técnico cualificado revise anualmente sus equipos y realice el mantenimiento siempre que sea necesario, usando exclusivamente piezas de repuesto de ADDISON®.
Información adicional: A través de los distribuidores de Addison está disponible la información sobre aplicaciones, guías detalladas sobre diseño de sistemas e instalación y funcionamiento de los productos. Por favor contacte con nosotros si necesita más información o si requiere un manual de instalación, funcionamiento y mantenimiento.
Este producto no es para uso residencial.
La intención de este documento es la de ayudar a los profesionales autorizados en el libre ejercicio de su profesión.

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SAFETY LABELING AND SIGNAL WORDS

Danger, Warning and Caution

The signal words **DANGER, WARNING** and **CAUTION** are used to identify levels of hazard seriousness. The signal word **DANGER** is only used on product labels to signify an immediate hazard. The signal words **WARNING** and **CAUTION** will be used on product labels and throughout this manual and other manuals that may apply to the product.

Signal Words

DANGER – Immediate hazards which **WILL** result in severe personal injury or death.

WARNING – Hazards or unsafe practices which **COULD** result in severe personal injury or death.

CAUTION – Hazards or unsafe practices which **COULD** result in minor personal injury or product or property damage.

Signal Words in Manuals

The signal word **WARNING** is used throughout this manual in the following manner:

⚠ WARNING

The signal word **CAUTION** is used throughout this manual in the following manner:

CAUTION

Product Labeling

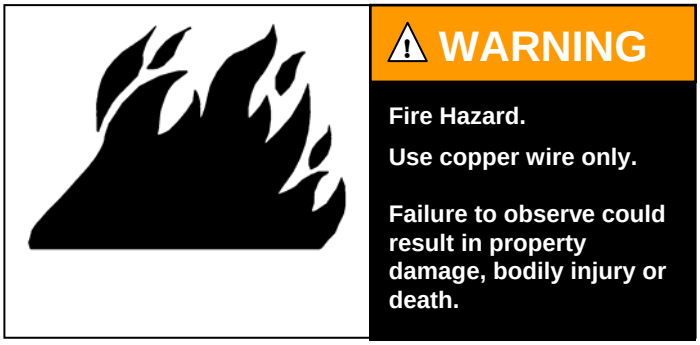
Signal words are used in combination with colors and/or pictures on product labels. Following are examples of product labels with explanations of the colors used.

Danger Label

White lettering on a black background except the word **DANGER** which is white with a red background.

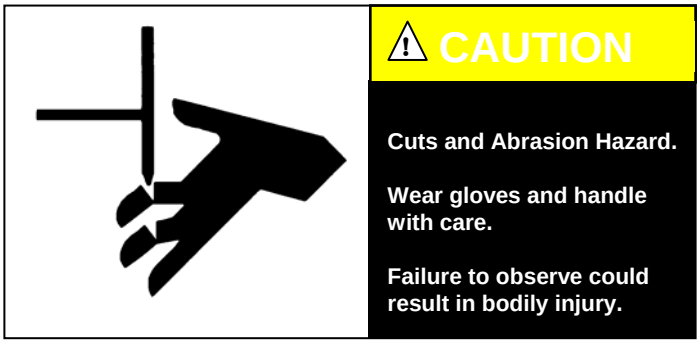
Warning Label

White lettering on a black background except the word **WARNING** which is white with an orange background.



Caution Label

White lettering on a black background except the word **CAUTION** which is white with a yellow background.



⚠ WARNING

This unit contains chlorodifluoromethane (HFC-22), a substance that harms public health and environment by destroying ozone in the upper atmosphere.

DO NOT VENT HCFC-22 to the atmosphere. The U. S. Clean Air Act requires the recovery of any residual refrigerant.

GENERAL DESCRIPTION

The model DC Series B packaged cooling and heating unit is designed to cool a conditioned space with mechanical refrigeration, chilled water, energy conservation wheel or a combination of these systems. During the heating mode supply air may be heated by indirect fired gas, electric strip, steam or hot water. The cabinet design provides space for a number of options, including 100% outside air applications and the use of desiccant wheels. Most of these options will be covered in this manual; for those of a more custom nature, consult the ADDISON Application Engineering Department.

Models DC units are designed for rooftop curb, slab mounted or installed on post and rail applications with field convertible vertical or left and right horizontal return and supply air duct connections.

Unpacking, Inspection

When received, the unit should be checked for damage that might have occurred in transit. If damage is found, it should be noted on the carrier's Freight Bill. Request for inspection by carrier's agent should be made in writing at once.

Design Certification

All units are certified by Electrical Testing Laboratories (E.T.L.) under ANSI/UL 1995. The gas furnace designs are certified by E.T.L. under ANSI Z83.9 (latest edition) for use with natural or propane (L.P.) gas as specified when ordering unit.

Codes and Ordinances

These units must be installed in accordance with the standard of the National Fire Protection Association or the National Fuel Gas Code ANSI Z83.9 (latest edition). The National Fuel Gas Code is available from the American Gas Association, 1515 Wilson Boulevard, Arlington, VA 22209. NFPA Publications are available from the National Fire Protection Association, Batterymarch Park, Quincy, MA 02269. Local authorities having jurisdiction should be consulted before installations are made to verify local codes and installation procedures.

All field wiring to the unit must be done in accordance with these instructions, the National Electric Code (ANSI/NFPA 70-1981) in the United States and all local codes and ordinances.

Clearances from the heater and vent to construction or material in storage must conform with the National Fuel Gas Code ANSI Z83.9 (latest edition), pertaining to gas-burning devices, and such material **must not attain a temperature over 160°F** by continued operation of the heater.

Installation should be done by a qualified agency in accordance with the instructions in this manual and in compliance with all codes and requirements of authorities having jurisdiction.

INSTALLATION

Unit Location, Clearances

An intake louver protects the service end and clearance at this point should be maintained. A 36" clearance must be allowed for access to the compressor and electrical panel. A 24" clearance must be maintained for the air inlet to the condenser coil(s). Do not locate the unit under an overhang that will short circuit hot air to the coil intakes.

When installed at ground level, the unit should be mounted on a level concrete slab which should extend at least 2" beyond the unit on all sides. The top of the slab should be 2" above the ground level.

The depth of the slab below the ground level and its structural design is governed by the type of soil and climatic conditions. The slab must not be in contact with any part of the building wall or foundation. The space between the slab and building wall prevents the possibility of transmitting vibration to the building.

The dimensions of the slab or roof mount should be checked and verified before the equipment arrives. Unit supports, roof opening, roof curb flashing, drain requirements, and electric locations are important to a good installation.

When installing the equipment on top of a building, the following should be considered:

Structural members supporting the unit must be sufficiently strong for the weight of the unit and mounting rails. Transmission of sound into the building is sometimes a problem when the structure is not strong enough.

Locate the unit as near as possible to the center of the area to be environmentally controlled. Sufficient clearance must be available for service, edge of roof, other units, or hazards.

The condenser air inlet and discharge air must be unobstructed by overhang, walls, or other equipment. Avoid locations next to exhaust fans or flues.

Select a location where external water drainage cannot collect around the unit.

Locate the unit so roof runoff water does not pour directly on the unit. Provide gutter or other shielding at roof level.

Where snowfall is anticipated, mount the unit above the maximum snow depth for the area.

Curb Installation, Protrusions

Proper installation for the DC series requires that the roof mounting, field assembled curb be firmly and permanently attached to the roof structure. Check for adequate fastening method prior to setting rooftop unit on curb.

Inspect curb to insure that none of the utility services (electric, gas, drain lines) routed through the curb protrude above the curb. Duct connections will normally be made after unit is set on curb. If duct is prefabricated and installed within the curb prior to setting unit, insure that ductwork does not protrude above curb.

CAUTION: DO NOT ATTEMPT TO SET UNIT ON CURB IF PROTRUSIONS EXIST.

CAUTION: Units may look identical but have significant internal differences.

Check specific unit location carefully (referring to plans if necessary) prior to setting unit.

Rigging

WARNING: Be sure that the crane and lift material (bars, cable, chain), (or other lifting device) capacity is adequate for the unit weight. See Addison specification literature for weights. The total unit weight calculated must include all appropriate options for your unit. Certain options can add significant weight to a unit.

Refer to labeling on unit for the required use of spreader bars. Spreader bars keep the lift cables from damaging the cabinet once the unit has been lifted. Larger units will require a third or fourth support in the middle of the unit. Keep the tension equal improper lift tension can damage wiring, refrigeration lines and the water tight integrity of the cabinet as well as sheet metal damage to the unit cabinet.

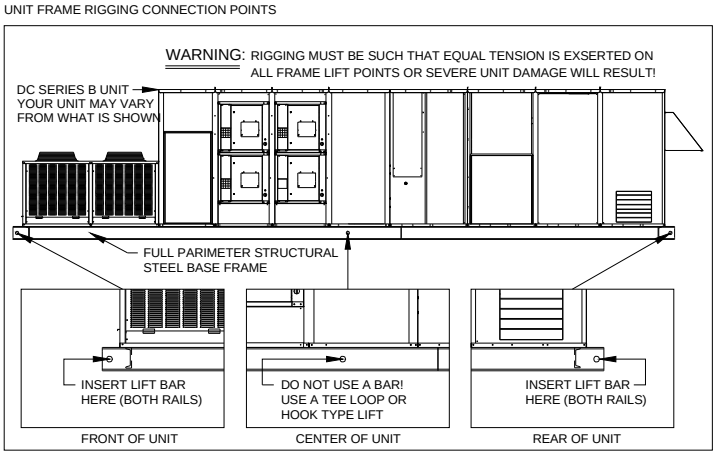


Figure 1

Lower unit carefully onto roof mounting curb or mounting rails or ground level slab. While rigging unit, center of gravity will cause condenser end to be lower than supply/return air end. Bring condenser end of unit into alignment with curb. With condenser end of unit resting on curb member and using curb as fulcrum, lower front end of unit until entire unit is seated on curb.

Rigging Removal

Remove spreader bars, lifting cables and other rigging equipment. Use caution not to dent scratch or otherwise damage cabinet or intake and exhaust hoods.

CAUTION: Do not allow crane hooks and spreader bars to rest on roof of the unit.

ELECTRICAL

Wiring Connections

Power wiring should be connected to the main power terminal block located within the unit main control section. Power wiring connections on units with factory disconnects should be made at the line side of the disconnect switch.

Low voltage wiring connections are made to the remote mounted controller or time clock.

DO NOT TAMPER WITH FACTORY WIRING

Contact your local representative or the factory if assistance is required. The internal power and control wiring of these units is factory installed and each unit is thoroughly tested prior to shipment.

Independent Power Source

It is recommended that an independent 115-volt power source be brought to the vicinity of the rooftop unit for portable lights and tools used by the service mechanic.

Main Power Wiring

The units are factory wired for the voltage shown on the nameplate.

Main power wiring should be sized for the minimum wire ampacity shown on the nameplate.

An external weather-tight disconnect switch properly sized for the unit total load is required for each unit. Disconnect must be installed in accordance with Local and/or National Electric Codes.

Power wiring may enter the Rooftop Unit through the side on all models or through the unit base and roof curbs on models with the Power Through Curb option. Install conduit connectors at the entrance locations. External connectors must be weatherproof.

Grounding

All units must be properly grounded. The ground lug is provided for this purpose. **DO NOT** use the ground lug for connecting a neutral conductor. The unit must be electrically grounded in accordance with local codes, or in the absence of local codes, with the NEC ANSI/NFPA 70 1981.

Once it is established that supply voltage is within the utilization range, check and calculate if an unbalanced condition exists between phases. Calculate percent voltage unbalance as follows:

$$\text{Percent Voltage Unbalance} = 100 \times \frac{\text{Maximum Voltage Deviation From Average Voltage}}{\text{Average Voltage}}$$

EXAMPLE — With voltage of 220, 215 and 210

Average voltage = 220 + 215 + 210

= 645 ÷ 3 = 215

Maximum voltage deviation from

Average voltage = 220 – 215 = 5

$$\text{Percent Voltage} = \frac{100 \times 5}{215} = \frac{500}{215} = 2.3\%$$

Percent voltage unbalance must not exceed (2%) two percent

Contact power company if phase unbalance exceeds 2%.

Control System Wiring: For commercial equipment the following table lists the minimum size of 24 volt class 2 wire to be used.

WIRE SIZE	FT. RUN FROM UNIT TO THERMOSTAT OR LONGEST RUN
18 AWG	Maximum Run 50 Feet
16AWG	Maximum Run 75 Feet
14AWG	Maximum Run 100/125 Feet
12AWG	Maximum Run 150/200 Feet

Note: Wiring - Consult the wiring diagram furnished with the unit. These units are custom designed for each application. The unit wiring diagram is located inside the control panel of each unit.

INSTALLATION CONTINUED

Ductwork

Properly sized and installed ductwork is critical to reliable performance of the unit and system. The DC Series B is field convertible for down flow or left and right horizontal supply and return duct connections. The DC Series B is shipped from the factory with **all** duct connections capped off. Simply remove the duct caps required for duct installation. Unit connection sizes are in the engineering specification literature. All ductwork must be installed according to local codes, practices and requirements.

Industry manuals should be used as a guide to sizing and designing the duct system.

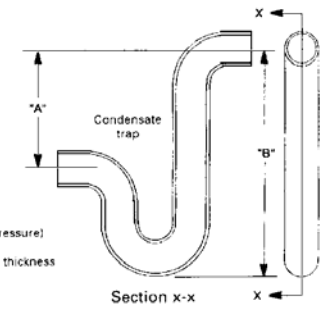
Ducts passing through unconditioned spaces must be well insulated with vapor barrier to prevent condensation.

Condensate Piping

A condensate trap must be provided by customer. Drainage of condensate directly onto the roof is acceptable if permitted by local codes. It is recommended that a small drip pad of either stone, or tar, wood or metal be provided to prevent any possible damage to the roof. If condensate is to be piped into the building drainage system, the drain line must penetrate the roof external to the unit. Refer to local codes for additional requirements.

Dimensions of schedule 40 pipe (inches)

Size	Nominal diameter Outside	Inside	Wall thickness
3/4	1.050	0.824	0.113
1	1.315	1.049	0.133
1 1/4	1.660	1.380	0.140
1 1/2	1.900	1.610	0.145
2	2.375	2.067	0.154
2-1/2	2.875	2.467	0.203
3	3.500	3.068	0.216



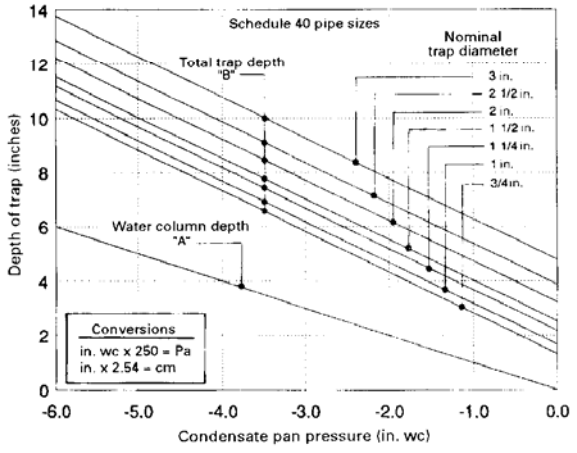
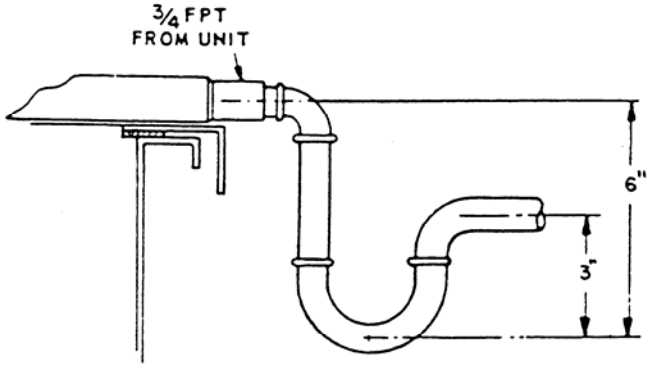


Figure 2

THE TRAP MUST BE PRIMED BEFORE OPERATING UNIT.



Drain Trap

CAUTION: Units with high internal and external static pressure drops will require a deeper trap. Use the graph and table in Figure 2.

GAS PIPING AND VENTING

For DC units with gas furnace options locate the gas furnace instruction manual located inside each gas furnace vestibule. **This manual will provide you with specific installation requirements and important safety and warning information that must be reviewed prior to installation of the gas heating equipment.**

WARNING

Gas-fired appliances are not designed for use in hazardous atmospheres containing flammable vapors or combustible dust, in atmospheres containing chlorinated or halogenated hydrocarbons, or in applications with airborne silicone substances. Improper installation, adjustment alteration, service, or maintenance can cause property damage, injury, or death. Read the installation, operation, and maintenance instructions thoroughly before installing or servicing this equipment.

WARNING

FOR YOUR SAFETY

The use and storage of gasoline or other flammable vapors and liquids in open containers in the vicinity of this appliance is hazardous.

INSTALLATION CONTINUED

Clearances

Adequate clearance around the unit must be kept for safety, accessibility, service, and maintenance. 48 inches clearance is required on the rear (furnace and electrical) end of the unit. This clearance must be maintained for compressor removal and in the case of a furnace unit, for removal of the furnace and to insure proper flue gas flow.

All combustible materials must be kept out of the area. A 48 inch clearance is also required on the front (outside air) end of the unit for blower removal and for adequate outside air accessibility. The clearance of 96 inches on the filter access side of the unit is required for blower shaft removal and 36 inches is required on the condenser side for an adequate supply of condenser air.

Combustion Air Clearances (See Model DF Instruction Manual For Additional Information)

	REQUIRED CLEARANCES				
		Sides*		Bottom	
Model	Top	Control	Opposite	To Combustibles	To Non-Combustibles
DF Series	36"	Width Of Furnace Plus 6"	0"	24"	0"
*Provide clearance as shown for safety, for combustion, and for service.					

COOLING SYSTEM OPTIONS

Hot Gas Bypass

Hot gas bypass is a means of capacity control during lower ambient temperature conditions.

The Hot Gas Bypass valve is an adjustable valve and should be set to open when the refrigerant suction pressure drops to 110-112 psig. It varies unit capacity by introducing discharge refrigerant into the evaporator circuit where it creates a false evaporator load. The hot gas is cooled prior to its return to the compressor as it passes through the evaporator.

The Hot Gas Bypass Solenoid Valve is energized through the thermostat and routes discharge gas to the hot gas bypass valve. It is de-energized during the pump down cycle.

Head Pressure Control

Low ambient control. Cycling the condenser fan or fans in response to compressor discharge pressure will permit stable operation in ambients down to 32F. The operating pressure switch is adjustable to match customer needs; it is factory set to re-energize the fans when discharge pressure drops to 295 psig and energize them when pressure increases to 430 psig.

Variable Speed Control

The ***VARISPEED*** Fan Control System controls the compressor discharge pressure. The speed control module responds to discharge pressure; it speeds the condenser fan up as pressure rises and slows the fan down as pressure falls due to load conditions or as outdoor ambient temperature falls.

Head pressure control is accomplished with one or two variable speed condenser fan drives, factory set to begin fan rotation at 380 psig and be at full fan speed at 430 psig.

Dual compressor dual fan units have one variable speed motor and control on each circuit.

Single compressor four fan units have one variable speed motor and control and three 3 phase constant speed motors. Two adjustable pressure controls are used on the 3 fans, the first operating one fan between 440 psig and 355 psig, the second operating two fans between 460 psig and 375 psig.

CAUTION: Pressure settings on the constant speed fans must **NOT** be set so as to permit operation below 355 psig or the variable speed motor may stall and overheat.

Single compressor, single fan units will have one variable speed motor and control.

Dual compressor, single fan units will have one variable speed motor and control with a sensor in each refrigerant circuit. The control reacts to the higher of the two operating pressures.

Single compressor dual fan units are equipped with one variable speed motor and control and one constant speed three-phase motor.

At low ambient, the variable speed fan operates, increasing in speed until maximum RPM is achieved at or around 45°F ambient. An adjustable pressure switch operates the constant speed three-phase fan set to energize the motor at 440 psig and de-energize at 355 psig. In the ambient temperature span of approximately

50°F to 53°F, the variable speed fan will ramp between maximum and minimum speed while the constant speed fan cycles. The start-stop cycle varies from 45 seconds to 2½ minutes during this period.

COOLING SYSTEMS OPTIONS

At 53°F, both fans are operating; the variable speed at minimum RPM and the constant speed at full RPM. As the ambient continues to rise, the variable speed motor increases to full speed and remains there.

If the application calls for a closer setting between maximum and minimum pressure settings on the constant speed fan, for example 440 psig on, 390 psig off, the effect will be to lengthen the temperature span during which the cycling takes place, for example 50°F to 57°F.

Adjustable High and Low Pressure Switches
Standard cooling units are equipped adjustable pressure switches. The low pressure switch is adjustable between 0psig – 150 psig and is factory set to open at 60 psig and close at 35psig. The high pressure switch is adjustable between 200 psig. And 610psig and factory set to open at 600psig and to close at 550 psig

MECHANICAL ADJUSTMENTS

SET FAN RPM.

All evaporator motor sheaves are set when tested and shipped from the factory. Actual rpm must be set and verified with a tachometer. Refer to the following Blower Performance Chart for basic unit fan rpm.

With disconnect switch open, place a jumper wire across Terminals R and G at TS1 Terminal Block. Close disconnect switch; evaporator fan motor will operate so rpm can be checked.

FAN ROTATION CHECK

Check that fan rotates clockwise when viewed from the drive side of unit and in accordance with rotation arrow shown on blower housing. If it does not, reverse two incoming power cables at TB Terminal Block.

Do not attempt to change load side wiring. Internal wiring assures all motors will rotate in correct direction once evaporator fan motor rotation check has been made.

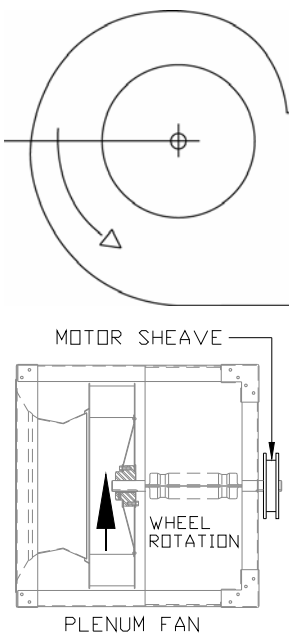


Figure 4

Blower Rotation

DRIVE BELT TENSION AND ALIGNMENT

Fan belt alignment and tension should be checked. Tension should be 3/4" depression per foot of belt span between pulleys.

Personal injury hazard.

Use extreme care during the following procedures and obey Safety Information.

Failure to do so may result in personal Injury.

The following safety rules MUST always be followed when working near belt drive.

Always Turn The Power Off

1. Turn the power to the unit OFF before you begin working on it.

Always Wear Protective Clothing

2. **NEVER** wear loose or bulky clothes, such as neckties, exposed shirttails, loose sleeves, or lab coats around belt drives. Wear gloves while inspecting sheaves to avoid nicks, burrs, or sharply worn pulley edges.

   The blower speed is changed by adjusting the variable speed pulley mounted on the blower motor.

   If the blower speed needed is different than the speed of the blower as shipped, follow the steps below to change the blower speed. Before changing the blower speed, read the above safety rules first.

3. Turn electric power **OFF**.
4. Remove the side blower access panel.

   Loosen the four motor mount bolts.

6. Turn the motor adjustment bolt counterclockwise until the belt is slack enough to come off easily.
7. Remove the belt. Do **NOT** pry off belt.
8. Loosen set screw(s) on the outer half of the adjustable pulley.
9. The unit has one of two different types of adjustable pulleys.
10. Remove key if unit has a keyway type pulley.
11. To set the blower for a desired CFM (L/s), first turn the outer half of the adjustable pulley clockwise until it meets the inner half of the pulley.
12. Turn the outer half of the adjustable pulley counter clockwise the correct number of turns to obtain the desired CFM (L/s).

    NOTE: To increase the blower speed, turn the outer half of the adjustable pulley clockwise. To decrease the blower speed, turn the outer half of the adjustable pulley counter clockwise.

13. Replace key if unit has keyway type pulley.
14. Tighten set screw(s).
15. Put on belt.
16. Turn motor adjustment bolt clockwise until the belt has enough tension at the proper deflection. Use one of the commercially available belt tension gauges to set the correct tension at the proper deflection.
17. Use a straight edge (angle iron, straight piece of board or anything with a straight surface or edge) to check the alignment of the blower pulley with blower motor pulley.

MECHANICAL ADJUSTMENTS CONTINUED

18. It may be necessary to back the tension off the belt temporarily and tighten one of the motor mount bolts before it is possible to adjust the angle of the blower motor.
19. Tighten all four blower motor mount bolts.

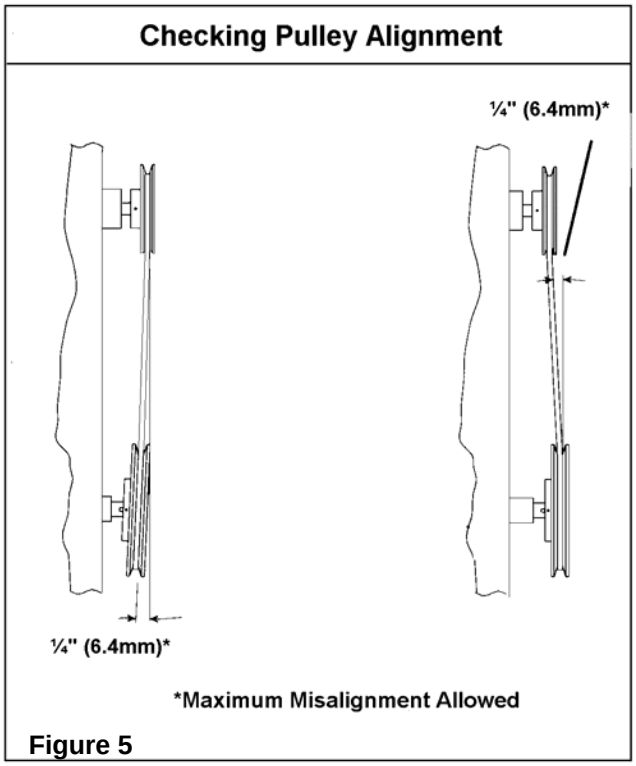


Figure 5

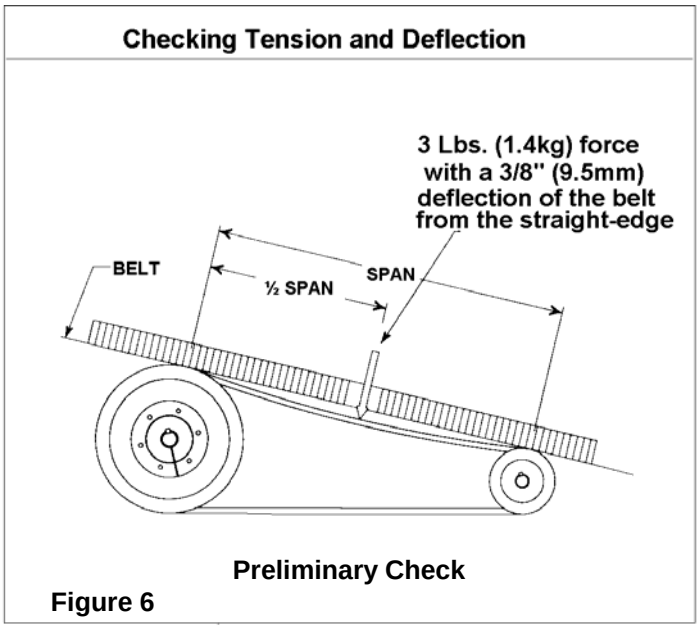


Figure 6

ELECTRICAL SYSTEM OPTIONS

Airflow Switch. Designed to prevent system operation unless there is proof of blower operation. A differential pressure switch measures the air pressures at the suction and discharge of the blower.

Clogged Filter Indicator. Dirty or clogged filters are indicated when the preset pressure differential across the filters is reached. The indicator is factory installed and is manually reset. It includes contacts for remote indication.

Convenience Outlet. A 115V GFCI receptacle mounted in a 2"x4" enclosure may be furnished with either a 15 amp circuit breaker or fuse block or 15 amp fuses. Separate 115-volt power source and ground is required.

Exhaust Fan Interlock. A relay installed in the unit control panel is energized when the blower is to interlock the unit with building exhaust fan(s).

Power Through the Curb. On curb mounted downflow units, a sleeve can be installed in the compressor section to bring power wiring inside the curb, preventing a separate roof penetration. The sleeve must be sealed after wiring is completed with a suitable mastic to prevent water from entering the space.

Firestat. This control, mounted in the return air section, de-energizes the unit when return air reaches 135°F. It is a manual reset control.

Sure-Trip™. This control automatically stops the unit whenever a phase is lost, when phases are out of sequence, or when supply voltage drops too low. Restart is automatic with a 5-minute delay after proper power supply conditions are restored.

DDC Controls. A multi-function direct digital controller in which temperature, pressure, and/or humidity sensors may be interfaced to provide a complete operating and monitoring system. Additional control information is provided with the unit such as controller instructions and unit wiring diagrams. Information can also be obtained thru the application department at Addison, See last page for contact information.

SEQUENCE OF OPERATION

Heating, Hydronic or Steam

Both hydronic and steam heat require a one or two row coil generally located downstream of the evaporator coil.

Controls for hydronic heat will involve a 3 way motorized mixing or blending valve, driven by a signal from a leaving air temperature thermostat.

Controls for low-pressure steam heat contain a motorized throttling valve driven by a signal from a leaving air temperature thermostat

Gas Heat

See the gas furnace instruction manual for wiring and performance data. Additional information can be found on the furnace access door such as the rating and serial label, wiring and lighting instruction label.

1. Blower operation is confirmed by line voltage from the load side of the blower contactor to the gas furnace power supply terminals.
2. The furnace section is energized from the control terminal across the normally closed contacts of the combustion pressure switch, energizing pilot ignition time delay relay heater. After delay of approximately 30-50 seconds the time delay relay's switch closes energizing the furnace venter motor. As the venter operates, it causes the combustion pressure switch to open. The ignition control energizes the pilot valve solenoid in the combination gas valve. A high voltage electric spark lights the pilot flame.
3. The flame sensor proves the presence of the pilot flame generating a DC current of 0.2 microamp (or greater) to the ignition control. The ignition control's internal switch action then de-energizes the spark transformer and makes a circuit to the high fire solenoid of the combination gas valve.
4. When there is a call for gas furnace operation the discharge air temperature causes a change in the resistance of a discharge air sensor thermistor. The Electronic solid state control center measures the sensor's change in resistance and sends a varying DC current to the Modulator-Regulator valve to adjust the gas input as required.
5. The flame sensor proves the presence of the pilot flame generating a DC current of 0.2 microamp (or greater) to the ignition control. The ignition control's internal switch action then de-energizes the spark transformer and makes a circuit to the high fire solenoid of the combination gas valve.

Electric Heat

1. DC units that use the down flow discharge. The installer **MUST** use an "L" shaped discharge duct that does not have an outlet directly below the units discharge opening, per UL1995. To guard against the very rare occurrence of a piece of an electric heating element breaking away. A straight duct or outlet grill directly below the unit discharge may allow a hot fragment to land in a conditioned space and start a fire.
2. Blower operation is generally confined by an air pressure differential switch as part of the heater assembly.
3. A thermostat or thermostats in the entering outside air energize the strip heat as required. Unit leaving air temperature will vary depending on kW, the number of stages, and the entering air temperature. Calculate the temperature rise using the following formula:

$$\text{°F Rise} = \frac{\text{kW x 3413}}{\text{1.08 CFM}}$$

Where °F rise is the air temperature increase, kW is the heater capacity in kilowatts and CFM is the total airflow of the unit.

Subtract the °F rise from the desired leaving air temperature and set the thermostat at that value. For multiple stages, calculate the °F rise for each stage and set thermostats subtracting each rise from the previous entering air temperature.

For example:

CFM 2000

kW 22.5, 3 stage, 7.5 kW each

Leaving air desired 65°F

$$\text{°F Rise} = \frac{\text{7.5 x 3413}}{\text{1.1 x 2000}} = 11.7\text{°F}$$

Set 1st stage thermostat to energize at 65-11.7 = 53.3° F

Set 2nd stage to energize at 53.3 -11.7 = 41.6°F

Set 3rd stage to energize at 41.6-11.7 = 29.9°F

ENERGY CONSERVATION WHEEL

Before starting up the unit, check the following:
1. Does the rotor rotate freely by hand?
If not, recheck the seal to determine whether or not it is binding and if so adjust seals following the instructions below.
2. Is the motor rotation correct?
This can be checked by detaching the belts from the drive sheave and bumping the motor. The sheave should be rotating in the direction such that the belt will result in rotation per the exterior markings. If not, rewire the motor.
3.Does the air flow orientation match up to design?
See the identification markings on the cassette and/or refer to the general arrangement drawing to check the four duct connections to the unit.
4. Are the belts on correctly and sufficiently tight?
Belt length is set by the manufacturer. Consult NovelAire if the belt appears too loose.
5. Is the VFD programmed to control the unit and to prevent frost formation?
If not, follow the instructions in the manual accompanying the VFD and/or consult NovelAire.

Seal checks
The ECW is provided with a neoprene bulb seal which provides not only an effective seal in both the peripheral and side-to-side sealing directions but also one which is easily adjusted to compensate for seal run-in, shipping misalignment, etc. The neoprene bulb is attached to a metal reinforced U-shaped neoprene grip. The metal/neoprene grip allows for an expandable grip range which can be moved closer or further from the sealing face as needed. The peripheral bulb seals against the wheel outer band and the inner bulb seals against the wheel face. With the wheel stopped, move seals as close to the sealing surface as possible but without exceeding grip range of bulb seal and without pressing the bulb down against the seal face. Bump the motor. If the motor will not turn, the seal is too close and should be nudged back where needed. The seal will seek its equilibrium position based on the closest part of the sealing face. Because the seal is meant to be a non-contact seal, small gaps may be seen between seal and sealing surface once the equilibrium position is reached. Seal leakage is meant to be less than 5% at 1 inch of differential between supply and exhaust. Some seal run-in is to be expected, so don't be alarmed by small amounts of wear in the neoprene.

Variable speed drive (VFD)
Check the power supply for proper rating. Make sure that the proper jumper orientation is used for the specific control input. Make sure that the unit is programmed for proper input voltage and output voltage.

Maintenance

Bearings
Small ECW's, (smaller than ECW666) are provided with no maintenance inboard bearings. These bearings should require no maintenance during the life of the equipment. Larger ECW's come equipped with an external flanged bearing which should be greased annually. Use a petroleum based lubricant.

Drive Motor
The drive motors should require no maintenance. Replacement motors may be purchased from normal motor distributors such as Grainger, or directly from NovelAire if preferred.

Drive Belts
NovelAire ECW belts are multilink belts with individual links constructed of a high performance polyurethane elastomer reinforced with multiple plies of polyester fabric. This belt provides a strong, yet flexible, belting. The multilink feature provides quick, easy servicing or replacement. See the Appendix for belt repair/replacement instructions.

Seals
The seals are designed to be durable and require no maintenance other than adjustment, but if seals become worn or damaged they may easily be replaced. The seals are made to clip on the cassette or post metal easily. Call NovelAire for servicing information.

Wheel
The wheel is designed to last the life of the equipment. It should be protected by an ASHRAE 30% filter to keep dust and dirt from the heat transfer surface. The wheel is somewhat self cleaning through its normal action of rotating in and out of countercurrent air flow streams. If the wheel becomes dirty, it may be cleaned by blowing out the unit with compressed air (20 psig maximum). In cases of severe filthiness, the wheel may be removed from the cassette and washed with water following wheel removable procedures outlined below:

1. Remove air handler plenum sections so that the front or back of the cassette may be easily accessed and cleared.
2. Support the wheel from the bottom.
3. If the unit is equipped with an external flanged bearing, loosen the Allen screws in the bearing housing that keeps the shaft affixed in the horizontal plane of both bearing, front and back. Remove the shaft clips at the face of the hub from both sides of the shaft. Unbolt one post completely and remove post with bearing completely out. Remove the shaft. Roll the wheel carefully out.
4. If the unit is equipped with an internal bearing, unbolt the shaft screw on both sides of the shaft. Unbolt one post completely and remove post. Remove the shaft clips at the face of the hub from both sides of the shaft. Remove the shaft. Roll the wheel out carefully
5. With the wheel out, wash the media carefully with water. Once clean, allow the media to dry out for several hours or days if necessary.
6. Reinstall using the reverse procedure. Run the unit. It may take several hours for the desiccant to dry out and for the wheel to perform normally.

TROUBLE SHOOTING GUIDES

General Refrigeration Circuit

SYMPTOM	POSSIBLE CAUSE	REMEDY
A.Compressor will not start	1. Power off, loose electrical connections or fuse open.	1. Check disconnect switch, fuses and wiring. Replace parts or repair as necessary.
	2. Compressor contactor not closing.	2. Check voltage to contactor coil, transformer, slave relay, system. Replace parts as necessary.
	3. Internal compressor thermal overload open.	3. If compressor is hot, allow 2 hours to cool. See thermal overload below.
	4. Compressor defective.	4. Check compressor for electrical failure. Compressor may be seized, check for L.R.A.
	5. High or low pressure switch open or defective.	5. Check calibration of high or low pressure switch, re-calibrate or replace.
	6. Oil pressure control open or defective.	6. Check oil failure control. See oil failure control below.
B.Compressor starts but cuts out on low pressure switch.	1. Low refrigerant charge	1. Check sightglass and check pressures.
	2. Airflow restricted.	2. Check for dirty evaporator coil, dirty filters, dampers closed, iced evaporator, proper belt adjustment, proper motor amps, duct design
	3. Restriction in liquid line.	3. Check head pressure, check and adjust TXV if not functioning properly, check pressure drop across filter drier.
	4. Defective low pressure switch.	4. Check calibration of switch.
C. Compressor starts but cuts out on high pressure switch.	1. Refrigerant overcharge.	1. Check pressures, charge by sub cooling.
	2. Condenser fan control has incorrect setting.	2. Check calibration of low ambient control.
	3. Fan motor defective.	3. Check fan motor.
	4. Condenser coil inlet obstructed or dirty.	4. Check coil and inlet clearances and for possible air recirculation.
	5. Air or non-condensables in system.	5. Check high side equalized pressure reading with equivalent outdoor temperature.
	6. Defective high pressure switch.	6. Check calibration of switch.
	7. Restriction in discharge or liquid line.	7. Check discharge and liquid line pressures, check TXV.
D. Compressor cuts out on thermal overload.	1. Low voltage.	1. Check voltage.
	2. Sustained high discharge pressure.	2. Check running amperage and conditions described under “high discharge pressure.”
	3. High suction and discharge pressures.	3. Check TXV setting, check for air in system.
	4. Defective compressor overload.	4. Allow compressor to cool for two hours if compressor is hot. Recheck for open circuit.
	5. Defective run capacitor.	5. Check run capacitor for compressor and fan motor.
	6. Improper refrigerant charge.	6. Check subcooling.
	7. Bearings or pistons too tight.	7. Check for low oil level.
	8. Allow time for compressor to cool.	8. Check dome temperature of the compressor.
E. Compressor cuts out on oil failure control (semi-herm.)	1. Low oil level.	1. Check crankcase sightglass - add oil to bring level to midway in sightglass.
	2. Defective oil pump.	2. Check oil pump.
	3. Defective control.	3. Check oil failure control for calibration.
	4. Liquid refrigerant is entering crankcase.	4. Compressor will be wet. Check crankcase heater or cause for liquid feedback.
F. Noisy compressor.	1. Scroll compressors are rotation sensitive.	1. Reverse wiring at disconnect switch, recheck for correct evaporator blower rotation.
	2. Refrigerant overcharge.	2. Check pressures and subcooling.
	3. Excessive or insufficient oil in compressor	3. Check oil level in hermetic compressors. Check total ¢ crankcase.
	4. Liquid floodback.	4. Check TXV setting. Check for refrigerant overcharge. oil as recommended.
	5. Tubing rattle.	5. Dampen tubing vibration by taping or clamping. Bend tubing away from contact where possible.
	6. Compressor defective.	6. Check internal parts (semi-herm.)

TROUBLE SHOOTING GUIDES CONTINUED

General Refrigeration Circuit

SYMPTOM	POSSIBLE CAUSE	REMEDY
G.Noisy unit operation.	1.Blower rotational noise.	1. Check blower, motor and drive for faulty adjustment or noisy bearings, loose parts, blower out of balance.
	2.Air noise.	2. Check ductwork. Air velocity too high.
	3.Chattering contactor.	3. Check for adequate control voltage, check for shorts or breaks, check thermostat, check contact points.
	4.Tubing rattle.	4. Dampen by taping or clamping, bend tubing away from contact when possible.
H.High suction pressure.	1.Excessive load on evaporator coil.	1. Check for high entering wet bulb temperature. Check for excessive airflow.
	2.Broken compressor valves (Scroll compressors do not have valves.)	2. Remove head (semi-herm.) inspect reeds. Scroll compressors should not be pumped down below 5 psig.
	3.Compressor is unloaded.	3. Check head pressure, check and adjust TXV if not functioning properly, check pressure drop across filter drier. Re-calibrate unloader pressure switch.
	4.Leaking check valve.	4. Check temperature across check valve.
	5.Expansion valve not secured to suction line or TXV defective.	5. Check the TXV, ensure bulb is insulated.
I.High discharge pressure.	1.TXV setting.	1. Check TXV setting and calibrate superheat.
	2.Air inlet to condenser dirty or obstructed.	2. Check for proper clearances and possible air recirculating.
	3.Condenser fan motor defective.	3. Check condenser fan motor and run capacitor.
	4.Condenser fan control has incorrect setting.	4. Check calibration of low ambient head pressure control.
J.Suction pressure too low.	1.Refrigerant undercharge.	1. Check pressures and subcooling.
	2.Blower running backward.	2. Interchange any two wires from 3 phase disconnect.
	3.Loose blower, pulley or belts.	3. Check drive pulley alignment, belt tension.
	4.Defective or improperly adjusted expansion valve.	4. Check superheat and adjust TXV.
	5.Dirty filter.	5. Check filter and evaporator coil.
	6.Too little air flow or low entering air temperature.	6. Check airflow and entering air wet bulb conditions.
	7.Restriction in suction or liquid line.	7. Check refrigerant circuit for restriction
K.Head pressure too low.	1.Insufficient refrigerant charge.	1. Check subcooling, check for leak.
	2.Defective or improperly adjusted expansion valve.	2. Check sub cooling and adjust TXV.
	3.Low suction pressure.	3. See “suction pressure too low” above.
	4.Condenser fan control setting.	4. Check calibration of low ambient control.
	5.Defective compressor.	5. See “high suction pressure” above.
L.Compressor short cycles.	1.Thermostat location or malfunction.	1. Check thermostat, check heat anticipator setting.
	2.Improper refrigerant charge.	2. Check subcooling, verify superheat.
	3.Defective high or low pressure control.	3. Check high or low pressure switch.
	4.Liquid floodback.	4. Possible tight bearings.
	5.Defective expansion valve.	5. Check TXV and superheat.
	6.Poor air distribution.	6. Check ductwork for recirculating.
	7.High discharge pressure.	7. See “high discharge pressure” above.
	8.Leaking discharge valves in compressor.	8. See “high suction pressure” above.
M.Running cycle too long or unit operates continuously.	1.Refrigeration undercharged.	1. Check subcooling.
	2.Dirty filter or evaporator coil.	2. Check filter, coil and airflow.
	3Dirty or clogged condenser coil.	3. Check coil and airflow.
	4.Air or other non-condensables in system.	4. Check equalized high side pressure with equivalent outdoor temperature.
	5.Defective compressor.	5. Check compressor for proper operation.
	6.Restriction in suction and liquid line.	6. Check for restrictions in refrigerant circuit.
	7.Control contacts stuck.	7. Check thermostat, shorts in wiring, slave relay compressor contactor

Continued

TROUBLE SHOOTING GUIDES CONTINUED

General Refrigeration Circuit Continued

SYMPTOM	POSSIBLE CAUSE	REMEDY
N. Supply air temperature too high.	1. Refrigerant undercharge or leak in system.	1. Check subcooling and check for leaks.
	2. Evaporator plugged with dirt or ice.	2. Check evaporator, airflow and filter.
	3. Improperly adjusted or defective expansion valve.	3. Check superheat and adjust TXV, check bulb.
	4. Defective compressor.	4. Check compressor for proper operation.
	5. High discharge pressure.	5. See “high discharge pressure” above.
	6. Airflow is too high.	6. Check external static pressure.
O. Supply air temperature	1. Airflow is too low.	1. Check evaporator coil, filter, check for closed dampers, grills, drive for loose parts, belts, misalignment, check external static pressure.
	2. Return air temperature too low.	2. Check entering air wet bulb conditions.
P. Liquid line too hot.	1. Refrigerant undercharge.	1. Adjust the charge by subcooling.
	2. High discharge pressure.	2. See “high discharge pressure” above.
Q. Liquid line frosted or wet.	1. Restriction in liquid line.	1. Restriction upstream of point of frosting.
R. Suction line frosting.	1. Insufficient evaporator air flow.	1. Check airflow, check drive for loose parts, belts, closed dampers.
	2. Restriction in suction or liquid line.	2. Restriction upstream of point of frosting.
	3. Malfunctioning or defective expansion valve.	3. Check bulb of TXV.
S. Blower motor not running.	1. Improper wiring.	1. Check wiring diagrams.
	2. Defective motor.	2. Check motor and controller.
	3. Defective thermostat or control circuit.	3. Check control circuit.
	4. Motor off on overload protector.	4. Allow motor to cool, check amperage.

Varispeed™ Condenser Head Pressure Control

SYMPTOM	POSSIBLE CAUSE	REMEDY
A. No fan operation.	1. Input pressure is below operating range.	1. No problem, normal operation.
	2. No 24 volt control voltage	2. Check for 24 V AC at control.
	3. No input pressure to control.	3. Check alignment of capillary fitting. Schrader valve depressor must depress Schrader valve enough to allow pressure into capillary.
	4. Bad fan motor.	4. Disconnect power. Place a jumper from L1 to M1 and connect power. If fan does not start, motor is bad and should be replaced.
	5. Pressure transducer problem.	5. Disconnect 6 pin connector from right side of control. Place a jumper wire between third pin from the top and bottom pin on the control (not the cable). If fan goes to full speed, check for input pressure. If it has been determined there is adequate pressure, the transducer is bad and the control must be replaced.
B. Fan stops when pressure reaches the high end of the operating range.	1. Control is not wired correctly.	1. See wiring diagrams.
C. No fan modulation (On-Off Operation)	1. Control is not wired correctly.	1. See wiring diagrams.
D. Fan starts at full speed.	1. Control is not wired correctly.	1. See wiring diagrams.
E. Erratic fan operation.	1. Control is not wired correctly.	1. Check to see if control voltage (24 V AC) is on same phase as motor.
	2. Dirty or blocked condenser coil.	2. Clean condenser coil.
F. Fan motor is cycling on thermal over	1. Dirty or blocked condenser coil.	1. Clean condenser coil.
	2. Wrong motor for fan speed control application.	2. Replace with motor approved for fan speed control application.

TROUBLE SHOOTING GUIDES CONTINUED

Hot Gas Bypass Regulator

SYMPTOM	POSSIBLE CAUSE	REMEDY
A. Erratic pressure control.	1. Defective regulator. 2. Dirt causing regulator to bind. 3. Power source to hot gas solenoid or operation of the solenoid is intermittent.	1. Replace defective part. 2. Disassemble regulator and clean internal parts. Install strainer. 3. Determine if problem is caused by supply voltage, solenoid, or excessive MOPD. Make changes necessary to correct problem.
B. Regulator leakage.	1. Dirt in regulator causing seat to remain open. 2. Worn or eroded seating surface on regulator.	1. Clean the regulator. Install strainer. 2. Replace defective part.
C. Regulator hunting (chattering) large fluctuations in controlled pressures.	1. Regulator is oversized. 2. Regulator and liquid injection Thermo Valve have control interaction. 3. Regulator and cylinder unloaders have	1. Contact Addison manufacturer for correctly sized regulator. 2. Increase superheat setting. Dampen bulb response by repositioning. 3. Differential should be increased between the controls by lowering the regulator's set point.
D. Regulator will not provide pressure control.	1. Regulator seat is restricted. 2. Pressure adjusting stem is set at a point so high that suction pressure never reaches the set point. 3. Strainer clogged at the regulator inlet. 4. MOPD exceeded across the solenoid or loss of source voltage. 5. Solenoid coil burned out. 6. Wrong type distributor for hot gas bypass to the evaporator.	1. Locate and remove stoppage. Install strainer. 2. Readjust the regulator. 3. Locate and remove stoppage. 4. Replace solenoid or troubleshoot the electrical problem. 5. Replace coil. 6. Install proper Venturi - Flo type distributor for low pressure drop.
E. Regulator fails to close.	1. Dirt under seat of the regulator. 2. Diaphragm failure (leakage around the adjusting stem) 3. Pressure adjusting stem is set at a point so high that suction never reaches the set point. 4. Blocked external equalizer passage. 5. Worn or eroded regulator seat.	1. Locate and remove stoppage. Install strainer or drier filter. 2. Replace defective parts. 3. Readjust the regulator. 4. Locate and remove stoppage. Install strainer. 5. Replace defective part.

TROUBLE SHOOTING GUIDES CONTINUED

General Gas Furnace

See gas furnace Instruction Manual Included with gas furnace(s) for trouble shooting details.

TROUBLE SHOOTING GUIDES CONTINUED

Electronic-Regulator

SYMPTOM	POSSIBLE CAUSE	FIELD TEST	REMEDY
A. Automatic control valve will not close despite full range of modulating voltage at terminals 1 and 2.	1. Faulty automatic control valve. 2. Installation wiring error. 3. Amplifier is faulty.	1. Remove wire from valve, if valve doesn't close —valve is faulty. 2. Remove wire from amplifier terminal 10 and 11. If valve remains open check for miswiring. 3. If AC voltage will not drop to zero at terminals 8 and 11 when DC voltage at terminals 1 and 2 is above 20 V DC, amplifier is faulty.	1. Replace automatic control valve. 2. Correct wiring. 3. Replace amplifier.
B. Automatic control valve will not open despite full range of modulating voltage at terminals 1 and 2.	1. Faulty automatic control valve. 2. Open wire to automatic valve. 3. Amplifier is faulty.	1. Read voltage across valve terminals. If 24 V AC, valve is faulty. 2. Read voltage across terminals 8 and 11 on amplifier. If 24V AC, check for open circuit to automatic valve. If space temperature is less than 60° or greater than 85°F. 3. If AC voltage reading remains zero when DC voltage at terminals 1 and 2 is below 14V DC, amplifier is faulty. If space temperature is less than 60° or greater than 85°F.	1. Replace automatic control valve. 2. Correct wiring. 3. Replace amplifier.
C. No gas flow.	1. Faulty power supply. 2. MR valve installed backward.	1. Read voltage at amplifier terminals 8 and 14 (24 V AC). 2. Arrow on MR valve should point in direction of gas flow.	1. Power supply must be 24V AC. 2. Install properly.
D. Continuous high fire.	1. Room Override Thermostat, if used, calls for heat. 2. Open circuit in sensing and setting circuit.	1. Remove T115 wires from amplifier terminals 3 and 14. 2. Disconnect and measure across wires connected to amplifier between terminals 3 and 4 (A1010). Should read between 8,000 and 12,000 ohms.	1. If proper operation is obtained, check thermostat wiring for shorts. Rotate thermostat dial above and below room temperature to prove thermostat function. 2. If above 12,000 ohms check circuit for open or loose wires.
E. Continuous high fire but automatic valve cycles.	1. Open circuit in wiring to MR valve. 2. Plunger jammed or installed upside down. 3. Faulty MR valve.	1. Check wiring for defects. 2. Plunger should be smooth and clean and operate freely in solenoid sleeve. 3. Measure voltage across MR valve.	1. Replace wiring if necessary. 2. Clean or replace plunger.
F. Furnace won't activate due to constant high modulating voltage (above 17 VDC).	1. Short circuit in sensing and setting circuit	1. Disconnect and measure across wires connected to amplifier terminals 3 and 4 (A1010). Should read between 8,000 and 12,000 ohms.	1. If below 8,000 ohms check circuit for shorts or miswiring.

TROUBLE SHOOTING GUIDES CONTINUED
Electronic-Regulator Continued

SYMPTOM	POSSIBLE CAUSE	FIELD TEST	REMEDY
G. Continuous low or medium fire, but automatic valve cycles correctly.	1. Heat load requires low fire only.	1. Increase temperature setting 10 degrees.	1. If heater goes to high fire, system is working correctly.
	2. Plunger and/or maximum spring missing.	2. Check for parts.	2. Install correct parts.
	3. Jammed plunger.	3. Examine. Plunger should be clean, smooth, and operate freely in solenoid sleeve.	3. Clean, or replace plunger if necessary.
	4. Other valves faults.	4. Remove wire from MR valve.	4. If MR valve remains on low fire, valve may be faulty.
	5. Inadequate supply pressure.	5. Remove max. adjustment spring from MR valve, push down on plunger. Insufficient manifold pressure with furnace operating indicates supply is too low.	5. Check for obstruction in gas pipe ahead of controls. Increase gas pressure if possible.
H. Incorrect discharge air temperature.	1. Calibration.	1. Check seal on calibration potentiometer.	1. Recalibrate per “Temperature Calibration” procedure.
I. Erratic or severely pulsating flame.	1. Dirty or sticking plunger.	1. Examine. Plunger should be clean, smooth, and operate freely in solenoid sleeve.	1. Clean or replace plunger if necessary.
	2. Loose or broken wiring.	2. Inspect wiring.	2. Correct wiring.
	3. Erratic voltage.	3. Observe DC voltage across amplifier terminals 1 and 2.	3. If erratic or pulsating DC voltage is observed and wiring shows no defects, replace amplifier. If erratic or pulsating voltage continues, contact Addison.

*Control circuits external to the Electronic-Regulator and Amplifier can cause burner malfunction. Always check gas valve to be certain it is turned on, and check limit controls for normal operation.

Installation Code and Annual Inspections:
All installations and service of ADDISON equipment must be performed by a contractor qualified in the installation and service of equipment sold and supplied by Addison and conform to all requirements set forth in the ADDISON manuals and all applicable governmental authorities pertaining to the installation, service and operation of the equipment. To help facilitate optimum performance and safety, Addison recommends that a qualified contractor annually inspect your ADDISON equipment and perform service where necessary, using only replacement parts sold and supplied by ADDISON.

Further Information: Applications, engineering and detailed guidance on systems design, installation and equipment performance is available through ADDISON representatives. Please contact us for any further information you may require, including the Installation, Operation and Service Manual.

These products are not for residential use.

This document is intended to assist licensed professionals in the exercise of their professional judgment.

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