ACC Series Condensers & Condensing Units

Installation, Operation, & Maintenance

Jetson
Excellence in HVAC

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Safety

Attention should be paid to the following statements:

NOTE - Notes are intended to clarify the unit installation, operation and maintenance.

⚠ **CAUTION** - Caution statements are given to prevent actions that may result in equipment damage, property damage, or personal injury.

⚠ **WARNING** - Warning statements are given to prevent actions that could result in equipment damage, property damage, personal injury or death.

⚠ **DANGER** - Danger statements are given to prevent actions that will result in equipment damage, property damage, severe personal injury or death.

⚠ WARNING

ELECTRIC SHOCK, FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly could result in dangerous operation, serious injury, death or property damage.
Improper servicing could result in dangerous operation, serious injury, death, or property damage.

- Before servicing, disconnect all electrical power to the furnace. More than one disconnect may be provided.
- When servicing controls, label all wires prior to disconnecting. Reconnect wires correctly.
- Verify proper operation after servicing. Secure all doors with key-lock or nut and bolt.

⚠ WARNING

QUALIFIED INSTALLER

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Startup and service must be performed by a trained service technician. A copy of this manual should be kept with the unit.

⚠ WARNING

Electric shock hazard. Shut off all electrical power to the unit to avoid shock hazard or injury from rotating parts.

⚠ CAUTION

PVC (Polyvinyl Chloride) and CPVC (Chlorinated Polyvinyl Chloride) are vulnerable to attack by certain chemicals. Polyolester (POE) oils used with R-410A and other refrigerants, even in trace amounts, in a PVC or CPVC piping system will result in stress cracking of the piping and fittings and complete piping system failure.

⚠ WARNING

VARIABLE FREQUENCY DRIVES

Do not leave VFDs unattended in hand mode or manual bypass. Damage to personnel or equipment can occur if left unattended. When in hand mode or manual bypass mode VFDs will not respond to controls or Alarms.

1. Startup and service must be performed by a trained service technician.

2. The unit is for outdoor use only.

3. Every unit has a unique equipment nameplate with electrical, operational, and unit clearance specifications. Always refer to the unit nameplate for specific ratings unique to the model you have purchased.

4. READ THE ENTIRE INSTALLATION, OPERATION AND MAINTENANCE MANUAL. OTHER IMPORTANT SAFETY PRECAUTIONS ARE PROVIDED THROUGHOUT THIS MANUAL.

5. Keep this manual and all literature safeguarded near or on the unit.

Model Number Descriptions

Digits 1 to 3— Model
ACC = Air-Cooled Condensing

Digit 4 — Condensing Type
R = Condenser
U = Condensing Unit

Digits 5 to 7 — Nominal Capacity
010 = 10 Tons
015 = 15 Tons
020= 20 Tons
025= 25 Tons
030= 30 Tons
040= 40 Tons
050= 50 Tons
060= 60 Tons
070= 70 Tons
080= 80 Tons

Digit 8 — Unit Voltage
A = 208 V/60 Hz/3 Phase
B = 230 V/60 Hz/3 Phase
F = 460 V/60 Hz/3 Phase
G = 575 V/60 Hz/3 Phase

Digits 9 — Unit Application
A = Air-Cooled Split System
B = Air-Cooled Split System (Low Ambient)
C = Air-Cooled Split System (High Ambient)
D = Heat Pump Split System

Digit 10 - Steps of Capacity
A = Single Circuit - On/Off Compressor
B = Single Circuit - Tandem Compressors
C= Single Circuit - Variable Speed Compressor
D = Circuit 1 - On/Off Compressor; Circuit 2 - On/Off Compressor
E = Circuit 1 - Tandem Compressors; Circuit 2 - On/Off Compressor
F = Circuit 1 - Tandem Compressors; Circuit 2 - Tandem Compressors
G = Circuit 1 - Variable Speed; Circuit 2 - On/Off Compressor
H = Circuit 1 - Variable Speed; Circuit 2 - Tandem Compressors
J = Circuit 1 - Variable Speed; Circuit 2 - Variable Speed

Digit 11 - Refrigerant Type
0 = R-410A

Digit 12 - Unit Efficiency
0 = Standard Efficiency
1 = High Efficiency

Digit 13 — Design Sequence
0 = Factory Assigned

Digit 14 — Evaporator Heat Exchanger Type
0 = Field Provided
6 = Factory Provided Remote Brazed Plate
7 = Factory Provided Remote Shell and Tube
8 = Factory Provided Remote High-Capacity Brazed Plate
9 = Factory Provided Remote High-Capacity Shell and Tube

Digit 15 — Evaporator Temp Range
0 = Standard Cooling 42 to 65°F [5.5 to 18.3°C]
1 = Standard Cooling/Ice Making 15 to 65°F [-6.7 to 15.6°C]

Digit 16 — Blank
0 = Blank

Digit 17 - Air-Cooled Condenser Heat Exchanger Type
0 = Microchannel Heat Exchanger (MCHE)
E = E-Coat Fin and Tube

Digit 18 - Condenser Fan Control
0 = Fixed Speed
1 = Variable Speed
2 = Low Sound

Digit 19 - Condenser Water Heat Recovery
0 = No Heat Recovery
1 = Full Heat Recovery

Digit 20 — Heat Recovery Condenser Control Valves
0 = None

Digit 21 — Power Connection
0 = Terminal Block
A = Non-Fused Disconnect Switch
B = Fused Disconnect Switch
C = High SCCR Fuse Block
D = Distribution Panel

Digit 22 — Power Feed
0 = 5 kA Rating
A = 5 kA Rating + Phase and Voltage Monitor

Digit 23 - Service Options
0 = None
A = LED Lighted Control Cabinet
B = Factory Wired 115V Outlet
C = Field Wired 115V Outlet
D = LED Lighted Control Cabinet + Factory Wired 115V Outlet
E = LED Lighted Control Cabinet + Field Wired 115V Outlet

Digit 24 - Control Style
0 = Single Unit Controller

Digit 25 — Local Unit Controller Interface
0 = Keypad with Dot Pixel Display
B = 15.4" Color Touchscreen

Digit 26 — Remote BMS Interface (Digital Comm)
0 = None
2 = Lon Talk®
4 = BACnet® MS/TP
5 = BACnet IP
6 = MODBUS®

Digit 27 - Blank
0 = Blank

Digit 28 - Refrigeration Options
0 = None
1 = Active Freeze Protection All Circuits
2 = Hot Gas Bypass All Circuits

Digit 29 - Refrigeration Accessories
0 = None
A = Compressor Isolation Valves
B =Replaceable Core Filter Driers
C = Replaceable Core Filter Driers + Compressor Isolation Valves

Digit 30 - Blank
0 = Blank

Digit 31 - Water Side Pressure
0 = 150 psi
A = 300 psi

Digit 32 - Water Strainer(s)
0= None
C = Condenser Water Wye Strainer
D = Condenser Water Wye Strainer with installation kit

Digit 33 - Water Accessories
0 = None

Digit 34 - Blank
0 = Blank

Digit 35 — Sound Attenuator
0 = None
A = Neoprene Pads
B = Compressor Sound Blanket(s)
C = Factory Sound Enclosure Cabinet(s)
D = Both sound blanket and enclosure
E = Compressor Sound Blanket(s) + Neoprene Pads
F = Factory Sound Enclosure Cabinet(s) + Neoprene Pads
G = Both sound blanket and enclosure + Neoprene Pads

Digit 36 - Guards
0 = None
A = Wire Mesh Coil Guards
B = Base + Coil Wire Mesh Guards
B = Coil Louvers
C = Base + Coil Louvers

Digit 37 - Exterior Finish & Shipping Splits
0 = Standard Paint, Each Module Packaged Separately
B = Custom Paint, Each Module Packaged Separately

Digit 38 - Warranty
0 = Standard Warranty

Digit 39 — Special Options
0 = None
X = With Specials

Digit 1 to 3 — Condensing Model

Base Model

ACC = Air-Cooled Condensing

Digit 4 — Condensing Type

With or without compressors

R = Condenser (no compressors)

U = Condensing Unit (with compressors)

Digits 5 to 7 — Nominal Capacity

The first numbers of the model string designate nominal tons cooling. Actual capacities will vary with conditions.

010 = 10 Tons

015 = 15 Tons

020 = 20 Tons

025 = 25 Tons

030 = 30 Tons

040 = 40 Tons

050 = 50 Tons

060 = 60 Tons

070 = 70 Tons

080 = 80 Tons

**Note: The nominal capacities reflect the use of R-410A refrigerant and a standard heat exchanger.*

Digit 8 — Unit Voltage

All units have single point power blocks with grounding lugs and 12V control circuits.

A = 208 V/60 Hz/3 Phase

B = 230 V/60 Hz/3 Phase

F = 460 V/60 Hz/3 Phase

G = 575 V/60 Hz/3 Phase

Digit 9 — Unit Application

A = Air-Cooled Split System – Standard air-cooled condenser or condensing unit with remote evaporator

B = Air-Cooled Split System (Low Ambient) – Air-Cooled condenser or condensing unit with special considerations for operation down to -20°F

C = Air-Cooled Split System (High Ambient) – Air-Cooled condenser or condensing unit with oversized condensers for operation up to 120°F

Digit 10 — Steps of Capacity

A = Single Circuit - On/Off Compressor – One fixed speed compressor on one refrigeration circuit

B = Single Circuit - Tandem Compressors– Two fixed speed compressors on one refrigeration circuit

C= Single Circuit - Variable Speed Compressor – One variable speed compressor on one refrigeration circuit

D = Circuit 1 - On/Off Compressor; Circuit 2 - On/Off Compressor – One fixed speed compressor on first refrigeration circuit; One fixed speed compressor on second refrigeration circuit

E = Circuit 1 - Tandem Compressors; Circuit 2 - On/Off Compressor – Two fixed speed compressors on first refrigeration circuit; One fixed speed compressor on second refrigeration circuit

F = Circuit 1 - Tandem Compressors; Circuit 2 - Tandem Compressors – Two fixed speed compressors on first refrigeration circuit; Two fixed speed compressors on second refrigeration circuit

G = Circuit 1 - Variable Speed; Circuit 2 - On/Off Compressor– One variable speed compressor on first refrigeration circuit; One fixed speed compressor on second refrigeration circuit

H = Circuit 1 - Variable Speed; Circuit 2 - Tandem Compressors– One variable speed compressor on first refrigeration circuit, Two fixed speed compressors on second refrigeration circuit

J = Circuit 1 - Variable Speed; Circuit 2 - Variable Speed - One variable speed compressor on first refrigeration circuit; One variable speed compressor on second refrigeration circuit

Digit 11 — Refrigerant Type

0 = R-410A

Digit 12 — Efficiency

1 = Standard Efficiency

2 = High Efficiency

Digit 13 — Design Sequence

0 = Factory Assigned

Digit 14 — Evaporator Heat Exchanger Type

0 = Field Provided DX coil in AHU with supply air VAV or CV control - "Air Over" Evaporator Application controlled by either a supply air or zone temperature sensor

6 = Factory Provided Remote Brazed Plate - Brazed plate heat exchangers are one of the most efficient ways to transfer heat. They are designed to provide unparalleled performance with the lowest life-cycle cost.

7 = Factory Provided Remote Shell and Tube - Shell and tube heat exchanger with grooved water connection and closed-cell rubberized insulation

8 = Factory Provided Remote High-Capacity Brazed Plate - Oversized brazed plate for 40°F leaving water applications.

9 = Factory Provided Remote High-Capacity Shell and Tube - Oversized shell and tube heat exchanger for glycol applications

Digit 15 — Evaporator Temperature Range

0 = Standard "Air Over" Evaporator. Generally limited to 55°F [12.8°C] – DX coils have a larger approach temperature than brazed plate evaporators. Therefore, the allowable leaving air temperature is greater than in standard chilled water applications.

0 = Standard Water Chilling 40 to 65°F [4.4 to 18.3°C] - The chiller with *standard* evaporator must not be operated with a leaving water temperature of less than 42°F for a plain water application. The chiller with *high-capacity* evaporator must not be operated with a leaving water temperature of less than 40°F for a plain water application.

1 = Standard Cooling/Ice Making 15 to 65°F [-9.4 to 18.3°C] - The dual roles of an ice-making chiller can substantially reduce the installed cost of the system. An ice-making chiller is NOT a conventional chiller with two different leaving-fluid temperature setpoints. An ice-making chiller operates at maximum capacity when in ice-making mode. It continues to operate at maximum capacity until the leaving-fluid temperature reaches the target setpoint. At a 10°F delta across the evaporator, this limit indicates that all of the water inside the ice storage tanks has been frozen. An external signal can be sent to the chiller to reset the chilled water setpoint back to conventional chilled water leaving fluid temperature and the chiller will return to traditional chiller operation.

Digit 16 — Blank

0 = Blank

Digit 17 — Condenser Heat Exchanger Type

0 = Microchannel Heat Exchanger (MCHE) – Aluminum coil with aluminum fins

C = E-Coat Microchannel Heat Exchanger (MCHE) – Polymer e-coating applied to the condenser coils. Coating surpasses a 6000-hour salt spray test per ASTM B117-90, yet is only 0.8-1.2 mils this and has excellent flexibility. Option is intended for use in coastal saltwater

conditions under the stress of heat, salt, sand and wind and is applicable to all corrosive environments where a polymer coating is acceptable.

Digit 18 — Condenser Fan Control

0 = Fixed Speed – Air-cooled units can operate down to 35°F by cycling condenser fans.

1 = Variable Speed – Air-cooled units can operate down to 0°F by slowing or stopping condenser fans.

Digit 19 — Condenser Heat Recovery

0 = No Heat Recovery –No secondary condenser heat exchanger or valve is installed.

1 = Refrigerant-to-Water Heat Recovery – A full capacity brazed plate condenser is provided and instead of rejecting heat to the air-cooled condenser coil, heat is recovered from the brazed plate heat exchanger and condenser water and can be used in many commercial facilities for preheating incoming air, washing, showering, and other everyday usage. Such facilities include:

- Hospitals, laundry, showers, and sterilization (often separate from other systems)
- Dormitories: laundry, showers, and general usage
- Hotels: laundry, showers, pool heat, and general usage

All of these facilities require large quantities of makeup water that must be heated.

0 = Refrigerant-to-Air Hot Gas Reheat – The modulating hot gas reheat system diverts hot discharge gas from the condenser to the air handling unit through the hot gas line. Field piping between the condensing unit and the air handler is required.

Digit 20 — Condenser Heat Recover Control Valves

0 = None

Digit 21 — Power Connection

0 = Terminal Block - Terminal Block to land incoming power wiring.

A = Non-Fused Disconnect Switch - Non-fusible disconnect switches do not incorporate fuses into their enclosure and provide no circuit protection capability. The purpose of a non-fusible safety switch is to provide an easy means to open and close a circuit.

B = Fused Disconnect Switch - Fusible disconnect switches combine fuses with the switch in a single enclosure, providing an easy means to manually open and close the circuit while the fuses protect against overcurrent.

C = High SCCR Fuse Block - Short-circuit current ratings provide the level of fault current that a component or piece of equipment can safely withstand (based on a fire and shock hazard

external to the enclosure). A 100kA SCCR can have significant impact in meeting safety and insurance requirements.

Digit 22 — Power Feed

0 = 5 kA Rating – Standard unit will have a 5 kAIC (Kilo Ampere Interrupting Capacity)

A = 5 kA Rating + Phase and Voltage Monitor - This option includes field provided power and an additional factory-installed phase/power monitor designed to protect the condenser or condensing unit from premature failure and damage due to common voltage faults such as voltage unbalance, over/under voltage, phase loss, reversal, incorrect sequencing and rapid short cycling.

B = 100 kA Rating - Short-circuit current ratings provide the level of fault current that a component or piece of equipment can safely withstand (based on a fire and shock hazard external to the enclosure). A 100kA SCCR can have significant impact in meeting safety and insurance requirements.

C = 100 kA Rating + Phase and Voltage Monitor – 100 kA rating and an additional factory-installed phase/power monitor designed to protect the condenser or condensing unit from premature failure and damage due to common voltage faults such as voltage unbalance, over/under voltage, phase loss, reversal, incorrect sequencing and rapid short cycling.

Digit 23 — Service Options

0 = None

A = LED Lighted Control Cabinet - LED lights provide bright lighting inside enclosure offer with long service life and can provide improve safety and visibility when service inside the enclosure is needed.

B = Factory Wired 115V Outlet – Factory wired electrical box with ground fault interrupter receptacle located within the control panel. The circuit is rated at 10 amps maximum and is factory wired to a step-down transformer and fuse block. The circuit is wired to the line side of the unit power block or power switch permitting use of the outlet while power to the unit is shut off. **Caution: When the power to the unit is disconnected with the factory installed unit power switch, the convenience outlet will remain live.**

C = Field Wired 115V Outlet – Field wired electrical box with ground fault interrupter receptacle, located with the control panel. Receptacle is rated for 20 amps. The outlet must be field wired to a 115 VAC power supply.

D = LED Lighted Control Cabinet + Factory Wired 115V Outlet

E = LED Lighted Control Cabinet + Field Wired 115V Outlet

Digit 24 — Control Style

0 = Single Unit Controller – Standalone Controller

Digit 25 — Local Unit Controller Interface

0 = Keypad with Dot Pixel Display - keypad, 128 x 64 dot pixel STN monochrome graphics LCD with 2.8" diagonal viewing area

B = 15.4-in. Color Touchscreen - Information and graphics are shown on high resolution (1280x800) LCD display with LED back lighting. The high-resolution screen makes it easy for the user to manage complex installations without losing the overall view or requiring a separate laptop. Pages can be navigated in a fast and straightforward manner.

Digit 26 — Remote BMS Interface (Digital Comm)

0 = None
2 = Lon Talk®
4 = BACnet® MS/TP
5 = BACnet® IP
6 = MODBUS®

Digit 27 — Blank

0 = Blank

Digit 28 — Refrigeration Options

0 = None

Digit 29 — Refrigeration Accessories

0 = None

A = Compressor Isolation Valves –Ball type Compressor Isolation Valves are mounted on the cooling circuit discharge and suction lines permitting isolation of the compressor for service or replacement. The valves are located close to the compressors. The valve works through a quarter turn from open to closed. Teflon seals and gaskets are used with a nylon cap gasket to prevent accidental loss. This option reduces the amount of refrigerant that must be recovered during compressor service or replacement since closing these valves isolates the compressor.

B = Replaceable Core Filter Driers - Replaceable Core Filter Driers allow for easy changeout of the filter-drier element.

C = Replaceable Core Filter Driers + Compressor Isolation Valves

Digit 30 — Blank

0 = Blank

Digit 31 — Heat Recovery Water Side Pressure

0 = 150 psi
A = 300 psi

Digit 32 — Heat Recovery Water Strainer(s)

0 = None

C = Condenser Water Flow Wye Strainer – Factory provided, field installed wye strainer can be placed in a horizontal or vertical pipeline as long as the screen is in a downward position. Straining is accomplished via a 20-mesh lined straining element.

D = Condenser Water Wye Strainer with Installation Kit - Wye strainer installation kits provide the piping transitions needed to easily attach the wye strainer to the heat recovery condenser.

Digit 33 — Water Accessories

0 = None

Digit 34 — Free Cooling

0 = None

1 = With Free Cooling - Free cooling is an economical method of using low external air temperatures to assist in chilling water. When outdoor temperatures are lower relative to indoor temperatures, this system utilizes the cool outdoor air as a free cooling source.

Digit 35 — Sound Attenuator

0 = None

A = Neoprene Pads - In applications that are sensitive to noise and vibration, optional neoprene isolator pads can be provided for load bearing points on ACC condensers or condensing units.

B = Compressor Sound Blankets - Factory installed Compressor Sound Blankets provide insulated sound covers on each compressor. These blankets dampen compressor generated sound. The blankets can be used alone or in combination with a sound cabinet.

C = Factory Sound Enclosure Cabinet - The sound enclosure is a factory installed option. The panels completely encase the condenser or condensing unit module. The panels, lined with sound absorbing insulation, can be removed for access in case of service and provide a streamlined appearance to the product while in place.

D = Compressor Sound Blankets + Factory Sound Enclosure Cabinet
E = Compressor Sound Blanket(s) + Neoprene Pads
F = Factory Sound Enclosure Cabinet(s) + Neoprene Pads
G = Compressor Sound Blankets + Factory Sound Enclosure Cabinet + Neoprene Pads

Digit 36 — Guards

0 = None
A = Wire Mesh Coil Guards - Optional factory-installed, vinyl-coated, welded-wire guards provide protection for the condenser coils.
B = Base + Coil Wire Mesh Guards - Optional factory-installed, vinyl-coated, welded-wire guards provide protection for the condenser coils and lower portion of the unit.
B = Coil Louvers - Optional factory-installed, louvered panels provide protection for the condenser coils.
C = Base + Coil Louvers - Optional factory-installed, louvered panels provide protection for the condenser coils and lower portion of the unit.

Digit 37 — Exterior Finish and Shipping Splits

0 = Standard Paint, Each Module Packaged Separately – Standard Jetson paint process uses primer wash then spray coated with a two-part polyurethane exterior paint.
B = Custom Paint, Each Module Packaged Separately – Custom colors are available for applications requiring ACC Series condenser or condensing unit to match existing color palettes.

Digit 38 — Warranty

0 = Standard Warranty – Warranty period is a period of twelve (12) months from date of start-up or eighteen (18) months from date of original shipment, whichever may occur first.
0 = Compressor Warranty (2-5 year) – Additional parts only warranty covering compressor(s) through 5 years from date of shipment.

Digit 39 — Special Options

0 = None
X = With Specials

General Information

WARNING

QUALIFIED INSTALLER

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Startup and service must be performed by a Factory Trained Service Technician.

System should be sized in accordance with the American Society of Heating, Refrigeration and Air Conditioning Engineers Handbook.

Installation of ACC condenser or condensing units must conform to the ICC standards of the International Mechanical Code, the International Building Code, and local building, plumbing and waste water codes. All appliances must be electrically grounded in accordance with local codes, or in the absence of local codes, the current National Electric Code, ANSI/NFPA 70 or the current Canadian Electrical Code CSA C22.1.

CAUTION

The Clean Air Act of 1990 bans the intentional venting of refrigerant as of July 1, 1992. Approved methods of recovery, recycling, or reclaiming must be followed.

WARNING

Coils and sheet metal surfaces present sharp edges and care must be taken when working with equipment.

WARNING

Failure to observe the following instructions will result in premature failure of your system and possible voiding of the warranty.

Receiving Unit

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. A request for inspection by carrier's agent should be made in writing at once. Nameplate should be checked to ensure the correct model sizes and voltages have been received to match the job requirements.

If repairs must be made to damaged goods, then the factory should be notified before any repair action is taken in order to protect the warranty. Certain equipment alteration, repair, and manipulation of equipment without the manufacturer's consent may void the product warranty. Contact Jetson shipping department for assistance with handling damaged goods, repairs, and freight claims: (903) 758-2900.

NOTE: Upon receipt check shipment for items that ship loose, such as sensors. Consult order and shipment documentation to identify potential loose-shipped items. Loose-shipped items may have been placed inside the unit cabinet for security. Installers and owners should secure all doors with locks or nuts and bolts to prevent unauthorized access.

Storage

If installation will not occur immediately following delivery, store equipment in a dry protected area away from construction traffic and in the proper orientation as marked on the packaging with all internal packaging in place. Secure all loose-shipped items.

Failure to observe the following instructions may result in premature failure of your system, and possible voiding of the warranty.

CAUTION

CRANKCASE HEATER OPERATION

Units are equipped with compressor crankcase heaters, which should be energized at least 24 hours prior to cooling operation, to clear any liquid refrigerant from the compressors

Never turn off the main power supply to the unit, except for complete shutdown. When power is cut off from the unit, any compressors using crankcase heaters cannot prevent refrigerant migration. This means the compressor will cool down, and liquid refrigerant may accumulate in the compressor. The compressor is designed to pump refrigerant gas and damage may occur when power is restored if liquid enters the compressor.

CAUTION

Rotation must be checked on all MOTORS AND COMPRESSORS of three phase units. All motors, to include and not be limited to pump motors and condenser fan motors, should all be checked by a qualified service technician at startup and any wiring alteration should only be made at the unit power connection.

Before unit operation, the main power switch must be turned on for at least 24 hours for units with compressor crankcase heaters. This will give the crankcase heater time to clear any liquid accumulation out of the compressor before it is required to run.

CAUTION

Scroll compressors are directional and will be damaged by operation in the wrong direction. Low pressure switches on compressors have been disconnected after factory testing. Rotation should be checked by a qualified service technician at startup using suction and discharge pressure gauges and any wiring alteration should only be made at the unit power connection.

Wiring Diagrams

A unit specific wiring diagrams in point-to-point form is laminated in plastic and located inside the control compartment door.

CAUTION

FIELD WIRED CONNECTIONS

Some units may require field wired connections. Refer to the wiring diagrams contained within the unit to identify any components or controls requiring additional wiring in the field before placing the unit into service. All additional field wiring should be performed by a trained service technician.

General Maintenance

When the initial startup is made and on a periodic schedule during operation, it is necessary to perform routine service checks on the performance of the condensing unit. This includes reading and recording suction pressures and checking for normal subcooling and superheat.

Installation

Forklifting the unit

Units can be lifted using a forklift. Lifting the unit with forks perpendicular to the long dimension may use forks 48” in length. Lifting of units with forks parallel to the unit’s long dimension must have forks 72” in length or the forks must have 72” fork extensions. Standard units can be lifted from all sides except the evaporator end. Forks must be perpendicular to the unit and they must be in far enough that the back of the forks are no more than 6” away from the edge of the unit.

Lifting the Unit

Do not lift unit from above unless spreader bars are used. Each module should be lifted using lift straps threaded through the steel base cutouts and a spreader bar.

If cables or chains are used to hoist the unit, they must be the same length. Care should be taken to prevent damage to the cabinet, coils, and condenser fans. Before lifting unit, be sure that all shipping material has been removed from unit. Secure hooks and cables at all lifting points / lugs provided on the unit.

Hoist unit to a point directly above the curb or concrete pad. Be sure that the gasket material has been applied to curb.

Carefully lower and align the unit with utility and duct openings. Lower the unit until the unit skirt fits around the curb. Make sure the unit is level and properly seated on the curb or pad.

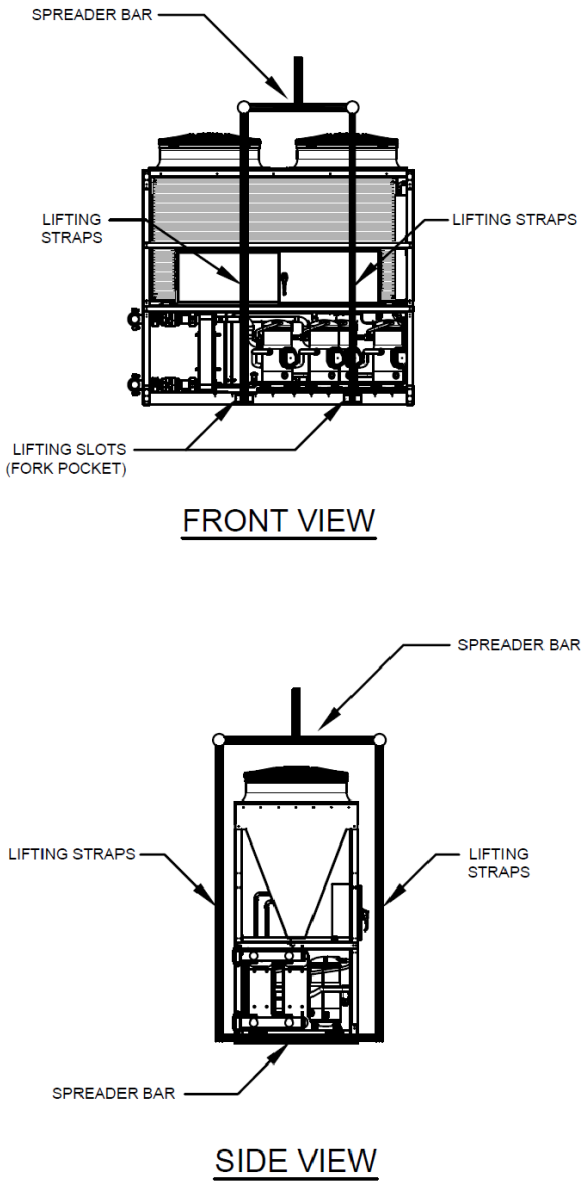


Figure 1 Rigging and forklift pockets

WARNING

HEAVY OBJECTS

Failure to follow instructions or properly lift unit could result in unit dropping and possibly crushing operator/technician which could result in death or serious injury, and equipment or property-only damage. Ensure that all the lifting equipment used is properly rated for the weight of the unit being lifted. Each of the cables (chains or slings), hooks, and shackles used to lift the unit must be capable of supporting the entire weight of the unit. Lifting cables (chains or slings) may not be of the same length. Adjust as necessary for even unit lift.

WARNING

IMPROPER UNIT LIFT

Failure to properly lift unit could result in unit dropping and possibly crushing operator/technician which could result in death or serious injury, and equipment or property-only damage. Test lift unit approximately 2 to 4 inches to verify proper center of gravity lift point. To avoid dropping of unit, reposition lifting point if unit is not level.

CAUTION

IMPROPER UNIT LIFT

If no, or improperly sized, spreader bar is used, damage to the unit may occur.

Locating the Unit

The ACC condenser or condensing unit is designed for outdoor applications and mounting at ground level or on a rooftop. It must be placed on a level and solid foundation that has been prepared to support its weight. When installed at ground level, a one-piece concrete slab should be used with footings that extend below the frost line. With ground level installation, care must be taken to protect the coil from damage due to vandalism or other causes. ACC condenser or condensing units are available with factory installed condenser coil guards.

The placement relative to the building air intakes and other structures must be carefully selected. Airflow to and from the condenser or condensing unit must not be restricted to prevent a decrease in performance and efficiency.

The installation position must provide at least sufficient clearance for proper airflow to the condenser coils. See Table 1 for individual unit clearances. When units are mounted adjacent to each other, the minimum clearance required between the units is 6 feet.

Table 1 - Service Clearances

Location	Clearance
Front - (Facing Controls)	36”
Back Side	24”
Left	48”
Right	48”
Top	Unobstructed

Units should not be installed in an enclosure or pit that is deeper than the height of the unit. When recessed installation is necessary, the clearance to maintain proper airflow is at least 6 feet.

ACC condenser or condensing units have a vertical air discharge. There must be no obstruction above the equipment. Do not place the unit under an overhang.

For proper unit operation, the immediate area around condenser must remain free of debris that may be drawn in and obstruct airflow in the condensing section.

Consideration must be given to obstruction caused by snow accumulation when placing the unit.

Avoidance of Short Water Loops

In remote water-to-refrigerant evaporator applications, adequate water volume is an important system design parameter because it provides for stable chilled water temperature control and helps limit unacceptable short cycling of compressors.

The evaporator's temperature control sensor is located in the supply (outlet) water connection or pipe. This location allows the building to act as a buffer to slow the rate of change of the system water temperature. If there is not sufficient water volume in the system to provide an adequate buffer, temperature control can suffer, resulting in erratic system operation and excessive compressor cycling.

Typically, a three-minute water loop circulation time is sufficient to prevent short water loop issues. Therefore, as a guideline, ensure the volume of water in the chilled water loop is greater than or equal to three times the evaporator flow rate. For systems with a rapidly changing load profile the volume should be increased.

If the installed system volume does not meet the above recommendations, the following items should be given careful consideration to increase the volume of water in the system and, therefore, reduce the rate of change of the return water temperature.

• A volume buffer tank located in the return water piping.

• Larger system supply and return header piping (which also reduces system pressure drop and pump energy use).

Minimum Water Volume for a Process Application

If a ACCU with remote evaporator is attached to an on/off load such as a process load, it may be difficult for the controller to respond quickly enough to the very rapid change in return solution temperature if the system has only the minimum water volume recommended. Such systems may cause low temperature safety trips or in the extreme case evaporator freezing. In this case, it may be necessary to add or increase the size of the mixing tank in the return line.

WARNING

The system must only be operated only with adequate volume and type of fluid flowing through the evaporators.

Mounting Isolation

For roof mounted applications or anytime vibration transmission is a factor, full perimeter vibration isolators may be used.

Access Doors

Lockable access doors are provided to the control compartment.

Electrical

The single point electrical power connections are made in the electrical

control compartment. The microprocessor control furnished with the unit is supplied with its own power supply factory wired to the main power of the unit.

Check the unit nameplate voltage to make sure it agrees with the power supply. Connect power to the unit according to the wiring diagram provided with the unit.

Table 2 - Nameplate Voltage Markings

Voltage Feature	Nameplate Voltage Marking	Min/Max VAC
208V/3Φ/60Hz	208	187/228
230V/3Φ/60Hz	230	207/253
460V/3Φ/60Hz	460	414/506
575V/3Φ/60Hz	575	518/632

Note: Units are factory wired for 208V, 230V, 460V, or 575V. The transformer configuration must be checked by a qualified technician prior to startup.

⚠ CAUTION

3-PHASE ROTATION

Rotation must be checked on all MOTORS AND COMPRESSORS of three phase units. Condenser fan motors should be checked by a qualified service technician at startup and any wiring alteration should only be made at the unit power connection. Variable frequency drives are programmed to automatically rotate the fan in the correct rotation. Do not rely on fans with variable frequency drives for compressor rotation.

Size supply conductors based on the unit MCA rating. Supply conductors must be rated a minimum of 167°F (75°C).

Route power and control wiring, separately, through the utility entry. Do not run power and signal wires in the same conduit.

Protect the branch circuit in accordance with code requirements. The unit must be electrically grounded in accordance with local codes, or in the absence of local codes, the current National Electric Code, ANSI/NFPA 70 or the current Canadian Electrical Code CSA C22.1.

Power wiring is to the unit terminal block or main disconnect. All wiring beyond this point has been done by the manufacturer and cannot be modified without effecting the unit's agency/safety certification.

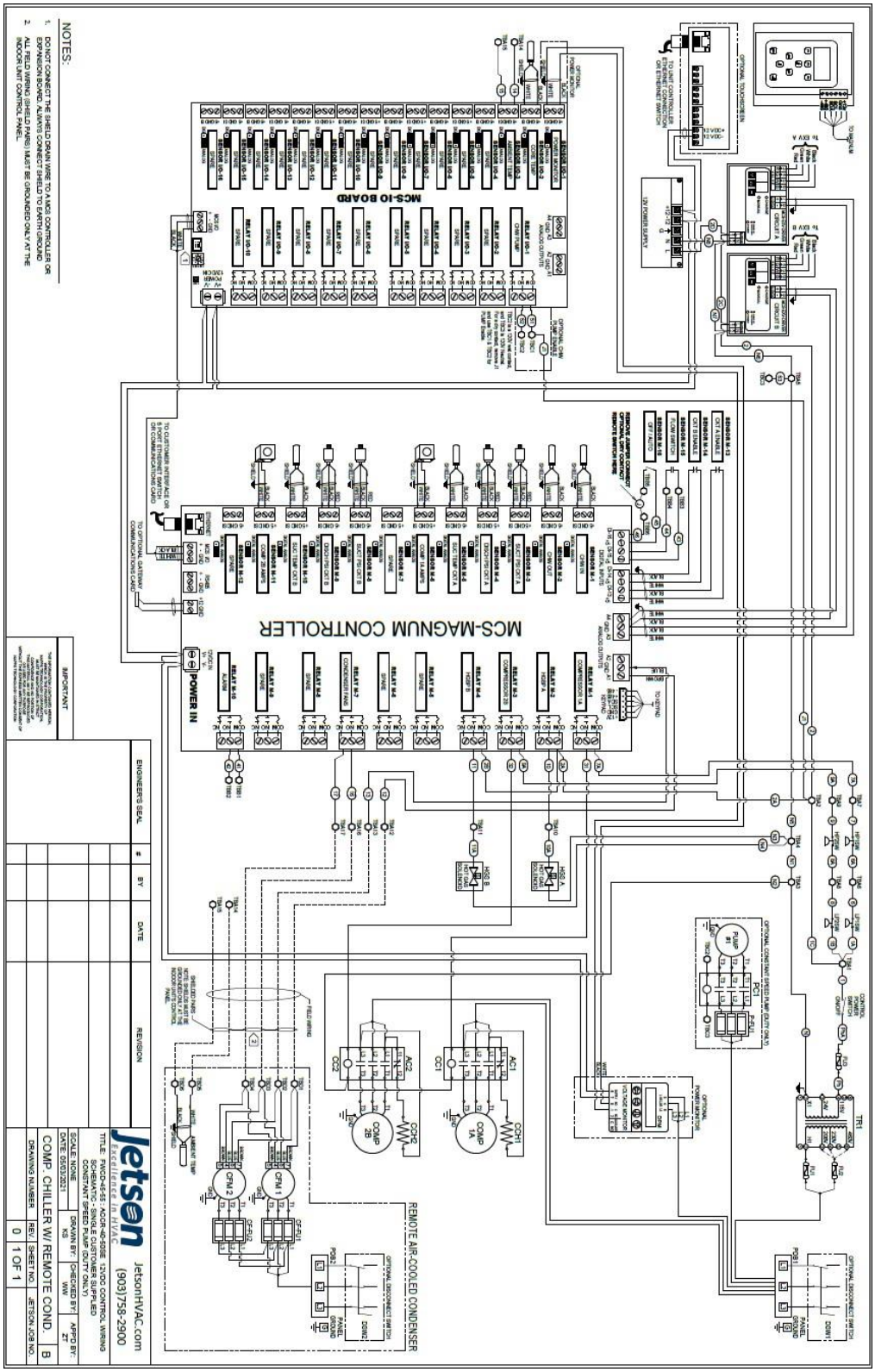
Three phase voltage imbalance will cause motor overheating and premature failure.
The maximum allowable imbalance is 5%.

Voltage imbalance is defined as 100 times the maximum deviation from the average voltage divided by the average voltage.

Example:
(218V+237V+235V)/3 = 230V, then 100*(230V-218V)/230V = 5.2%, which exceeds the allowable imbalance.

Check voltage imbalance at the unit disconnect switch and at the compressor terminal. Contact your local power company for line voltage corrections.

Electrical Diagram



WARNING

ELECTRIC SHOCK

Electric shock hazard. Before attempting to perform any installation, service, or maintenance, shut off all electrical power to the unit at the disconnect switches. Unit may have multiple power supplies. Failure to disconnect power could result in dangerous operation, serious injury, death or property damage.

Note: Startup technician must check motor amperage to ensure that the amperage listed on the motor nameplate is not exceeded.

CAUTION

SEALING ELECTRICAL ENTRIES

Installing Contractor is responsible for proper sealing of the electrical entries into the unit. Failure to seal the entries may result in damage to the unit and property.

WARNING

CONVENIENCE OUTLETS AND SERVICE LIGHTS

Convenience outlet and service light circuits are wired to the incoming power side of the disconnect. These circuits will remain powered even when unit disconnect is off.

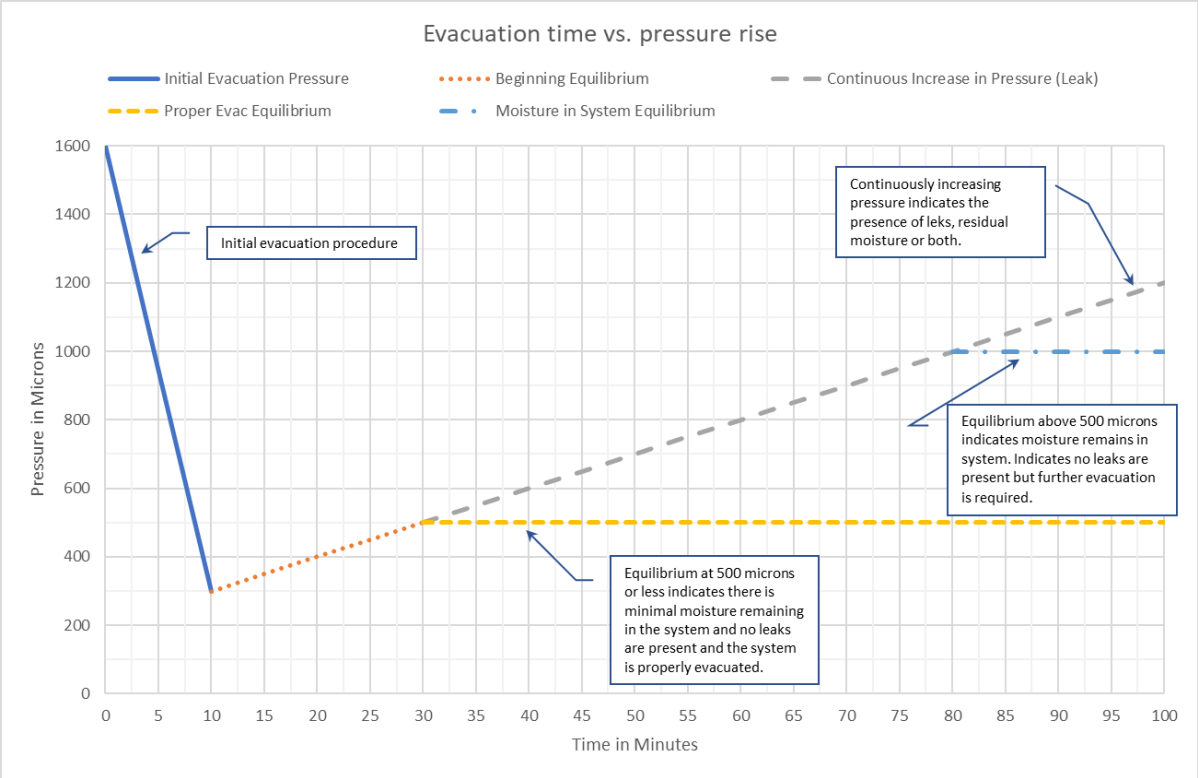
Standard Evacuation Instructions

Proper system evacuation is critical to remove moisture and non-condensable fluids from the system before charging the system with refrigerant. Use the following procedure to ensure the entire system is pulled into a good vacuum.

1. System evacuation must be performed anytime a system is open to atmospheric pressure. The POE oils used with R-410A are extremely hydroscopic in nature and immediately begin pulling in moisture once the system is opened to the atmosphere.
2. Before starting to evacuate the system, you MUST ensure that there are no leaks by pressurizing the system with 400 psig of dry nitrogen and verifying no pressure loss after one hour.
3. Connect the manifold set to the condensing unit with one hose on the suction line service valve, one hose on the liquid line service valve and if an extra Schrader valve is field installed on the suction line, connect a third hose. The vacuum pump must be connected to the manifold set using a 3/8” vacuum rated hose. Dual circuit unit must have each circuit evacuated separately.
4. An accurate micron gauge must be used and checked by pulling a vacuum on the gauge by itself and verify a rapid drop to less than 100 microns within a few minutes.
5. Do not attach the micron gauge to the system until the gauge manifold is reading 28’’ of vacuum to ensure the micron gauge does not see pressure and is thus damaged. Micron gauges may be damaged by pressure.
6. The micron level required is 300 microns for systems using POE oils.
7. The system must then be isolated and the pump turned off to check for vacuum rise due to leaks or moisture in the system. The micron gauge must not rise above 500 microns after 30 minutes of wait time. An example of the evacuation pressures versus time can be seen in

Figure 2 - Evacuation time vs. Pressure rise.

Figure 2 - Evacuation time vs. Pressure rise



Startup

Before startup of the split system make sure that the following items have been checked.

1. Verify that electrical power is available to the unit(s) and pump(s), if applicable.

2. Verify that any remote stop/start device connected to the condenser or condensing unit controller is requesting the condenser or condensing unit to start.

3. Verify that liquid flow from the building is present through the evaporator, if applicable. Verify that airflow from the building is present through the evaporator, if applicable.

4. There should be adequate building load in order to properly check operation.

5. Using controller set the leaving water or air temperature setpoint.

6. Use the general check list in the startup form to make a last check that all the components are in place, water/air flow is present, and the power supply is energized.

7. Cycle through all the compressors to confirm that all are operating within tolerance.

8. While performing the check, use the startup form to record observations of amps and refrigerant pressures.

9. When all is running properly, use controller to place the controller in the run mode and observe the system until it reaches a steady state of operation.

⚠ CAUTION

Rotation must be checked on all MOTORS AND COMPRESSORS of three phase units. All motors, to include and not be limited to pump motors and condenser fan motors, should all be checked by a qualified service technician at startup and any wiring alteration should only be made at the unit power connection.

⚠ CAUTION

Before completing installation, a complete operating cycle should be observed to verify that all components are functioning properly.

Adjusting Refrigerant Charge

Charging a system in the field must be based on determination of liquid sub-cooling and evaporator superheat. On a system with an electronic expansion valve, liquid subcooling is more representative of the charge than evaporator superheat but both measurements must be taken.

Before Charging

Refer to the Unit Nameplate as a reference when determining the proper refrigerant charge.

Unit being charged must be at or near full load conditions before adjusting the charge.

After adding or removing charge the system must be allowed to stabilize, typically 10-15 minutes, before making any other adjustments.

The type of unit and options determine the ranges for liquid sub-cooling and evaporator superheat. Refer to Table 3 - Acceptable Refrigeration Circuit Values when determining the proper sub-cooling.

The type of unit and options determine the ranges for liquid sub-cooling and evaporator superheat. Refer to Table 3 - Acceptable Refrigeration Circuit Values when determining the proper sub-cooling.

Checking Liquid Sub-cooling

Measure the temperature of the liquid line as it leaves the condenser coil.

Read the gauge pressure at the liquid line close to the point where the temperature was taken. Use liquid line pressure as it will vary from discharge pressure due to condenser coil pressure drop.

Convert the pressure obtained to a saturated temperature using the appropriate refrigerant temperature-pressure chart. Subtract the measured liquid line temperature from the saturated temperature to determine the liquid sub-cooling.

Compare calculated sub-cooling to Table 3 - Acceptable Refrigeration Circuit Values for the appropriate unit type and options.

Checking Evaporator Superheat

Measure the temperature of the suction line close to the compressor.

Read gauge pressure at the suction line close to the compressor.

Convert the pressure obtained to a saturated temperature using the appropriate refrigerant temperature-pressure chart.

Subtract the saturated temperature from the measured suction line temperature to determine the evaporator superheat.

For refrigeration systems with tandem scroll compressors, it is critical that the suction superheat setpoint on the expansion valve is set with one compressor running. The suction superheat should be 8-10°F with one compressor running. The suction superheat will increase with both compressors in a tandem running. Inadequate suction superheat can allow liquid refrigerant to return to the compressors which will wash the oil out of the compressor. Lack of oil lubrication will destroy a compressor. Liquid sub-cooling should be measured with both compressors in a refrigeration system running.

Compare calculated superheat to the acceptable cooling mode superheat values of 10-15°F for all system types and subcooling to range of 8-12°F.

CAUTION

EXPANSION VALVE ADJUSTMENT

Expansion valves must be adjusted to approximately 10-15°F of suction superheat. Failure to have sufficient superheat will damage the compressor and void the warranty.

Table 3 - Acceptable Refrigeration Circuit Values

Air-Cooled Condenser	
Sub-Cooling	8-12 °F
Superheat	10-15 °F

Adjusting Sub-cooling and Superheat Temperatures

The system is overcharged if the sub-cooling temperature is too high and the evaporator is fully loaded (low loads on the evaporator result in increased sub-cooling) and the evaporator superheat is within the temperature range shown in Table 3 - Acceptable Refrigeration Circuit Values (high superheat results in increased sub-cooling).

Correct an overcharged system by reducing the amount of refrigerant in the system to lower the sub-cooling.

CAUTION

DO NOT OVERCHARGE

Refrigerant overcharging leads to excess refrigerant in the condenser coils resulting in elevated compressor discharge pressure

The system is undercharged if the superheat is too high and the sub-cooling is too low.

Correct an undercharged system by adding refrigerant to the system to reduce superheat and raise sub-cooling.

If the sub-cooling is correct and the superheat is too high, the expansion valve may need adjustment to correct the superheat.

Table 4 - R-410A Refrigerant Temperature-Pressure Chart

°F	PSIG	°F	PSIG	°F	PSIG	°F	PSIG	°F	PSIG
20	78.3	**47**	134.7	**74**	213.7	**101**	321.0	**128**	463.2
21	80.0	**48**	137.2	**75**	217.1	**102**	325.6	**129**	469.3
22	81.8	**49**	139.7	**76**	220.6	**103**	330.2	**130**	475.4
23	83.6	**50**	142.2	**77**	224.1	**104**	334.9	**131**	481.6
24	85.4	**51**	144.8	**78**	227.7	**105**	339.6	**132**	487.8
25	87.2	**52**	147.4	**79**	231.3	**106**	344.4	**133**	494.1
26	89.1	**53**	150.1	**80**	234.9	**107**	349.3	**134**	500.5
27	91.0	**54**	152.8	**81**	238.6	**108**	354.2	**135**	506.9
28	92.9	**55**	155.5	**82**	242.3	**109**	359.1	**136**	513.4
29	94.9	**56**	158.2	**83**	246.0	**110**	364.1	**137**	520.0
30	96.8	**57**	161.0	**84**	249.8	**111**	369.1	**138**	526.6
31	98.8	**58**	163.8	**85**	253.7	**112**	374.2	**139**	533.3
32	100.9	**59**	166.7	**86**	257.5	**113**	379.4	**140**	540.1
33	102.9	**60**	169.6	**87**	261.4	**114**	384.6	**141**	547.0
34	105.0	**61**	172.5	**88**	265.4	**115**	389.9	**142**	553.9
35	107.1	**62**	175.4	**89**	269.4	**116**	395.2	**143**	560.9
36	109.2	**63**	178.4	**90**	273.5	**117**	400.5	**144**	567.9
37	111.4	**64**	181.5	**91**	277.6	**118**	405.9	**145**	575.1
38	113.6	**65**	184.5	**92**	281.7	**119**	411.4	**146**	582.3
39	115.8	**66**	187.6	**93**	285.9	**120**	416.9	**147**	589.6
40	118.1	**67**	190.7	**94**	290.1	**121**	422.5	**148**	596.9
41	120.3	**68**	193.9	**95**	294.4	**122**	428.2	**149**	604.4
42	122.7	**69**	197.1	**96**	298.7	**123**	433.9	**150**	611.9
43	125.0	**70**	200.4	**97**	303.0	**124**	439.6		
44	127.4	**71**	203.6	**98**	307.5	**125**	445.4		
45	129.8	**72**	207.0	**99**	311.9	**126**	451.3		
46	132.2	**73**	210.3	**100**	316.4	**127**	457.3		

Line Sizing Guidelines

Liquid Line Sizing

Pressure drop should not be so large as to cause gas formation in the liquid line, insufficient liquid pressure and the liquid feed device, or both. Systems are normally designed so that pressure drop in the liquid line from friction is not greater than that corresponding to 1 to 2°F change in saturation temperature.

Sufficient sub-cooling must be maintained at the expansion valve. To provide proper operation throughout the range of operating conditions, the liquid-line pressure drop should not exceed the unit's minimum sub-cooling value less 5°F. To achieve this objective, keep these liquid line considerations in mind:

1. Select the smallest, practical line size for the application. Limiting the refrigerant charge improves compressor reliability.
2. When designing the liquid line for a typical air conditioning application (i.e., one with an operating range of 40°F to 110°F), remember that every 10 feet of vertical rise will reduce sub-cooling by 2.8°F, while every 10 feet of vertical drop will add 1.1°F of subcooling.
3. Provide a 1-inch pitch toward the evaporator for every 10 feet of run.
4. If the liquid line must be routed through an area warmer than outdoor air temperature, insulate the line to prevent the refrigerant from flashing. A liquid line filter drier must be installed as close as possible to the expansion device. The filter drier should be changed whenever the system is opened for service. ACC condenser and condensing units do not include a filter-drier as standard, but one may be ordered if the installing contractor desires a factory type.
5. A moisture-indicating sight glass permits a visual check of the liquid column for bubbles. Never use the sight glass to determine whether the system is properly charged! Instead, either charge the system based on the required sub-cooling or calculate the amount of refrigerant needed and add it based on weight.

Suction Line Sizing

Gas velocity is a consideration when sizing suction lines. It has been found that the minimum velocity requirement to move oil in horizontal suction lines is 500 fpm. For vertical up-flow suction lines, it must be increased to 1000 fpm. Keeping all suction line velocities below 4000 fpm will avoid excessive and undesirable noise levels. The maximum allowable suction line pressure drop is 3 psig.

Discharge (Hot Gas) Line Sizing

Limit the pressure drop in the discharge line to 6 psig whenever possible to minimize the adverse effect on unit capacity and efficiency. While a pressure drop of as much as 10 psig may be permissible, note that a 6-psig pressure drop reduces unit capacity by 0.9 percent and efficiency by 3.0 percent.

Pitch discharge lines in the direction of hot gas flow at the rate of 1/2-inch per each 10 feet of horizontal run. Discharge line sizing is based on required velocity to provide good oil movement. Basic discharge line parameters are:

- Maximum allowable pressure drop 6 psig (°F)
- Maximum Velocity 3500 fpm
- Minimum Velocity (at minimum load)
    - Horizontal lines 500 fpm
    - Vertical lines (up flow) 1000 fpm

To design the discharge line properly, follow the recommended guidelines:

1. Choose the shortest route from the compressor to the condenser.
2. Use different pipe sizes for horizontal and vertical lines to make it easier to match line pressure drop and refrigerant velocity to discharge-line requirements.
3. Prevent oil and condensed refrigerant from flowing back into the compressor during "off" cycles by:
    a. pitching the discharge line toward the condenser, and
    b. routing the discharge line so that it rises to the top of the condenser, then drops to the level of the condenser inlet, creating an inverted trap.
4. Double risers are generally unnecessary. The scroll compressors in ACC condensers and condensing units unload to the extent that a single, properly sized riser can transport oil at any load condition.
5. Riser traps are also unnecessary. Avoid using riser traps. If the discharge riser is sized to maintain the proper refrigerant velocity, adding a trap will only increase the pressure drop.

Maintenance

General

Qualified technicians must perform routine service checks and maintenance. This includes reading and recording the condensing and suction pressures and checking for normal sub-cooling and superheat.

Compressors

The scroll compressors are fully hermetic and require no maintenance except keeping the shell clean.

Refrigerant Filter Driers

Each refrigerant circuit should contain a filter drier. Replacement is recommended when there is excessive pressure drop across the assembly or moisture is indicated in a liquid line sight glass.

Table 6- Max Filter Drier Pressure Drops

Circuit Loading	Max. Pressure Drop
100%	10 psig
50%	5 psig

Lubrication

All original motors and bearings are furnished with an original factory charge of lubrication.

Service

If the unit will not operate correctly and a service company is required, only a trained service technician qualified and experienced in both refrigerant chillers, split systems and air conditioning is permitted to service the system to keep warranties in effect. If assistance is required, the service technician must contact Jetson.

Note: Service technician will need the model and serial number of the unit in all correspondence with Jetson factory.

Warranties

Please refer to the limitation of warranties in effect at the time of purchase.

Maintenance Recommendations

Labeled Motors

It is imperative for repair of a motor with Underwriters' Laboratories label those original clearances be held; that all plugs, screws, other hardware be fastened securely, and that parts replacements be exact duplicates or approved equals. Violation of any of the above invalidates Underwriters' Label.

Air Inlet

Inspect the air inlet into the condenser section on a monthly basis to remove any paper, leaves or other debris that may block the airflow.

Propeller Fans and Motors

The fans are directly mounted on the motor shafts and the assemblies require minimal maintenance except to assure they are clear of dirt or debris that would impede the airflow.

Recommended Annual Inspection

In addition to the above maintenance activities, a general inspection of the unit surface should be completed at least once a year.

Air-Cooled Condenser

The air-cooled condenser section rejects heat by passing outdoor air over the microchannel coils for cooling of the hot refrigerant gas from the compressors. The heated air will discharge from the top of the section through the axial flow fans.

The condenser coils should be inspected yearly to ensure unrestricted airflow. If the installation has a large amount of airborne dust or other material, the condenser coils should be cleaned with a water spray in a direction opposite to airflow. Care must be taken to prevent damage to the microchannel coil.

Microchannel Coil Cleaning

Documented routine cleaning of microchannel coils with factory provided E-coating is required to maintain coating

warranty coverage. See E-Coated Coil Cleaning section.

Air-cooled heat exchangers include microchannel coils.

Cleaning microchannel coils is necessary in all locations. In some locations it may be necessary to clean the coils more or less often than recommended. In general, a condenser coil should be cleaned at a minimum of once a year. In locations where there is commonly debris or a condition that causes dirt/grease build up it may be necessary to clean the coils more often. Proper procedure should be followed at every cleaning interval. Using improper cleaning technique or incorrect chemicals will result in coil damage, system performance degradation, and potentially leaks requiring coil replacement.

Documented routine cleaning of microchannel coils with factory provided E-coating is required to maintain coating warranty coverage. Use the E-Coated Coil Cleaning section for details on cleaning E-coated coils.

Field applied coil coatings are not recommended with microchannel coils.

Allowed Chemical Cleaners and Procedures Jetson recommends certain chemicals that can be used to remove buildup of grime and debris on the surface of microchannel coils. These are the only chemicals that Jetson will warrant as correct for cleaning microchannel coils.

There are three procedures that are outlined following that will clean the coils effectively without damage to the coils. Use of any other procedure or chemical may void the warranty to the unit where the coil is installed. **With all procedures make sure the unit is off before beginning procedure.**

⚠ WARNING

Electric shock hazard. Shut off all electrical power to the unit to avoid shock hazard or injury from rotating parts.

The water pressure used to clean should not exceed 100 psi, from no closer than 6 inches from the coils, and with the water aimed perpendicular to the coils.

#1 Simple Green

Simple Green is biodegradable with a neutral 6.5 pH. Recommendation is to use it at a 4 to 1 mix. Use the following procedure.

1. Rinse the coil completely with water. Use a hard spray but be careful not to bend or damage the fins. A spray that is too hard will bend the fins. Spray from the fan side of the coil.
2. With a pump sprayer filled with a mix of 4 parts water to one-part Simple Green spray the air inlet face of the coil. Be sure to cover all areas of the face of the coil.
3. Allow the coil to soak for 10-15 minutes.
4. Rinse the coil with water as in step one.
5. Repeat as necessary.

#2 Vinegar

This is standard white vinegar available in gallons from most grocery stores. It has a pH

of 2-3, so it is slightly acidic. Use the following procedure.

1. Rinse the coil completely with water. Use a hard spray but be careful not to bend or damage the fins. A spray that is too hard will bend the fins. Spray from the fan side of the coil.
2. Use a pump sprayer filled with vinegar (100%). Spray from the face of the coil in the same direction as the airflow. Be sure to cover all areas of the face of the coil.
3. Allow the coil to soak for 10-15 minutes.
4. Rinse the coil with water as in step one.
5. Repeat as necessary.

#3 Water Flush

This procedure can be used when the only material to cause the coil to need cleaning is debris from plant material that has impinged the coil face.

1. Rinse the coil completely with water. Use a hard spray but be careful not to bend or damage the fins. A spray that is too hard will bend the fins. Spray from the fan side of the coil.
2. Spray and rinse the coil from the face.

⚠ CAUTION

PRESSURE CLEANING

Use pressurized clean water, with pressure not to exceed 100 psi. Nozzle should be 6" and 80° to 90° from coil face. Failure to do so could result in coil damage.

Microchannel Coil Cleaning Considerations

The three procedures can be used to clean microchannel coils. The proper application will depend on the equipment's installation environment.

In areas where the spring/summer has a heavy bloom (i.e., cottonwood), method #3 may be the preferred cleaning method if the unit is installed on an office building and no other environmental factors apply.

If the unit is installed where a sprinkler system sprays onto the condenser, coil cleaning method #2 may provide best results. Vinegar is slightly acidic and may help with calcium build up. This also works well when grease is part of the inlet air to a condenser coil.

Generally, the broadest based method is #1. The grease cutting effect of the Simple Green is good for restaurant applications.

Other Coil Cleaners

There are many cleaners on the market for condenser coils. Before using any cleaner that is not covered in this section you must get written approval from the Jetson warranty and service department. Use of unapproved chemicals will void the warranty.

Unless a chemical has a neutral pH (6-8) it should not be used.

Beware of any product that claims to be a foaming cleaner. The foam that is generated is caused by a chemical reaction to the aluminum fin, tube, and coating material on microchannel coils.

Microchannel coils are robust in many ways, but like any component they must be treated

correctly. This includes cleaning the coils correctly to give optimal performance over many years.

E-Coated Coil Cleaning

Documented quarterly cleaning of e-coated coils is required to maintain coating warranty coverage.

⚠ WARNING

Electric shock hazard. Shut off all electrical power to the unit to avoid shock hazard or injury from rotating parts.

Surface loaded fibers or dirt should be removed prior to water rinse to prevent restriction of airflow. If unable to back wash the side of the coil opposite of the coils entering air side, then surface loaded fibers or dirt should be removed with a vacuum cleaner. If a vacuum cleaner is not available, a ***soft non-metallic*** bristle brush may be used. In either case, the tool should be applied in the direction of the fins. Coil surfaces can be easily damaged (fin edges bent over) if the tool is applied across the fins.

Use of a water stream, such as a garden hose, against a surface loaded coil will drive the fibers, dirt and salts into the coil. This will make cleaning efforts more difficult. Surface loaded fibers must be completely removed prior to using low velocity clean water rinse.

Quarterly cleaning is required to maintain warranty coverage and is essential to maintain the life of an E-coated coil. Coil cleaning shall be part of the unit's regularly scheduled maintenance procedures.

Failure to clean an E-coated coil on the prescribed quarterly cycle will void the warranty and may result in reduced efficiency and durability in the environment.

A routine two-step quarterly coil cleaning is required to maintain warranty.

Step one is to clean the coil with an approved coil cleaner listed in Microchannel Coil Cleaning.

Step two is to use the approved salt/chloride remover in the following section to dissolve soluble salts and revitalize the unit. It is very important when cleaning and/or rinsing not to exceed 130°F and potable water pressure is less than 100 psig to avoid damaging the unit and coil fin edges.

⚠ CAUTION

PRESSURE CLEANING

High velocity water from a pressure washer or compressed air should only be used at a very low pressure to prevent fin and/or coil damages. The force of the water or air jet may bend the fin edges and increase airside pressure drop. Reduced unit performance or nuisance unit shutdowns may occur.

CAUTION

CHEMICAL CLEANING

Harsh chemicals, household bleach, or acid cleaners should not be used to clean e-coated coils. These cleaners can be very difficult to rinse out of the coil and can accelerate corrosion and attack the e-coating. If there is dirt below the surface of the coil, use the recommended coil cleaners.

For routine quarterly cleaning, first clean the coil with the approved coil cleaner. After cleaning the coils with the approved cleaning agent, use the approved chloride remover to remove soluble salts and revitalize the unit.

Recommended Coil Cleaner – Step 1
GulfCoat™ Coil Cleaner, when used in accordance with the manufacturer's directions on the container for proper mixing and cleaning, this cleaner has been approved for use on E-coated coils to remove mold, mildew, dust, soot, greasy residue, lint and other particulate. Never use any cleaners that are not approved.

Recommended Chloride Remover – Step 2
CHLOR*RID® Concentrate, when used in accordance with the manufacturer's directions on the container for proper mixing, has been approved for use on E-coated coils to remove chlorides/salts & sulfates. Never use any chloride removers that are not approved.

Warranty Protection – Step 1 Complete the coil cleaning following these steps:

1. Ensure that the power to the unit is off and locked out.
2. Clean the area around the unit if needed to ensure leaves, grass or loose debris will not be blown into the coil.
3. Remove panels or tops as required gaining access to the coil(s) to be cleaned.
4. Using a pump-up sprayer, fill to the appropriate level with potable water and add the correct amount of approved cleaner as per manufacture instructions leaving room for the pump plunger to be reinserted.

NOTE: Coils should always be cleaned / back flushed, opposite of airflow to prevent impacting the dirt into the coil.

5. If the coils have heavy dirt, fibers, grass, leaves etc. on the interior or exterior face areas, a vacuum and brush should be used to remove those surface contaminants prior to applying cleaner. The interior floor, drain tray or pan areas should also be vacuumed.
6. Apply the mixed cleaner to coil surfaces using a pressurized pump-up sprayer maintaining a good rate of pressure and at a medium size nozzle spray, (not a solid stream and not a wide fan but somewhere in the middle). Work in sections/panels ensuring that all areas are covered and kept wetted.
7. Apply the cleaner to unit interior air exiting side coil surfaces first. Work in sections/panels moving side to side and from top to bottom.

8. Generously soak coils by spraying cleaner directly on and into the fin pack section to be cleaned and allow the cleaning solution to soak for 5 to 10 minutes.
9. Using pressurized potable water, (<100 psi), rinse the coils and continue to always work in sections/panels. Start at the top of the coil and slowly move vertically downward to the bottom. Then, staying in the same vertical area, slowly move back up to the top where you started. Now move over slightly overlapping the area just completed and repeat above. Continue until all coil areas on the inside of the unit have been rinsed.
10. Complete steps 5-9 for the exterior air entering side of the coils.
11. Final rinse – Now complete a quick rinse of both sides of the coil including the headers and piping.
12. If the coil has a drain pan or unit floor that is holding rinse water or cleaner, extra time and attention will need to be taken in those areas to ensure a proper rinse has been completed.

Warranty Protection – Step 2 Complete the coil chloride (salt) removal following these steps:

1. CHLOR*RID® is a concentrate to be used for both normal inland applications at a 100:1 mix ratio OR for severe coastal applications 50:1 mix ratio with potable water,
   (2.56 ounces of Chlor*rid to 1 gal of water). Using a pump-up sprayer, fill to the appropriate level with potable water and add the correct amount of CHLOR*RID® salt remover leaving room for the pump plunger to be reinserted.
2. Apply CHLOR*RID® to all external coil surfaces using a pressurized pump-up sprayer maintaining a good rate of pressure and at a medium size nozzle spray, (not a solid stream and not a wide fan but somewhere in the middle). Work in sections/panels ensuring that all areas are covered and kept wetted.
3. Generously soak coils by spraying CHLOR*RID® directly on and into the fin pack section. Let stand for 5 to 10 minutes keeping the area wetted. Do not allow to dry before rinsing.
4. Using pressurized potable water, (<100 psi), rinse the CHLOR*RID® and dissolved chlorides/salts off of the coils continuing to always work in sections/panels.
5. Starting at the top of the coil, begin rinsing the coil from side to side until you reach the bottom. Repeat as many times as is necessary to ensure all coil sections/panels have been completed and are thoroughly rinsed.
6. Reinstall all panels and tops that were removed.

ACC Condensers or Condensing Unit Startup Form

Job Name: _____ Date: _____

Address: _____

_____

Model Number: _____

Serial Number: _____ Tag: _____

Startup Contractor: _____

Address: _____

_____ Phone: _____

Pre-Startup Checklist

Installing contractor should verify the following items.

1. Is there any visible shipping damage?	☐ Yes	☐ No
2. Is the unit level?	☐ Yes	☐ No
3. Are the unit clearances adequate for service and operation?	☐ Yes	☐ No
4. Do all access doors open freely and are the handles operational?	☐ Yes	☐ No
5. Have all shipping braces been removed?	☐ Yes	☐ No
6. Have all electrical connections been tested for tightness?	☐ Yes	☐ No
7. Does the electrical service correspond to the unit nameplate?	☐ Yes	☐ No
8. On 208/230V units, has transformer tap been checked?	☐ Yes	☐ No
9. Has overcurrent protection been installed to match the unit nameplate requirement?	☐ Yes	☐ No
10. Have all set screws on the fans been tightened?	☐ Yes	☐ No
11. Do all fans rotate freely?	☐ Yes	☐ No
12. Does the field water piping to the unit appear to be correct per design parameters?	☐ Yes	☐ No

Ambient Temperature

Ambient Dry Bulb Temperature _____°F Ambient Wet Bulb Temperature _____°F

Remote Evaporator Chiller Operation

Chilled Water In Temperature _____°F Chilled Water Out Temperature _____°F

Water/Glycol System

1. Has the entire system been flushed and pressure checked? ☐ Yes ☐ No
2. Have isolation valves to the evaporator been installed? ☐ Yes ☐ No
3. Has the entire system been filled with fluid? ☐ Yes ☐ No
4. Has air been bled from the heat exchangers and piping? ☐ Yes ☐ No
5. Is there a minimum load of 25% of the design load? ☐ Yes ☐ No
6. Has the water piping been insulated? ☐ Yes ☐ No
7. Is the glycol the proper type and concentration? (N/A if water) ☐ Yes ☐ No
8. What is the freeze point of the glycol? (N/A if water)

Compressors/DX Cooling

☐ Check Rotation

Number	Model #	L1	L2	L3	Head Pressure PSIG	Suction Pressure PSIG	Crankcase Heater Amps
1							
2							
3							
4							

Refrigeration System 1 - Cooling Mode

	Pressure	Saturated Temperature	Line Temperature	Sub-cooling	Superheat
Discharge				N/A	N/A
Suction				N/A	
Liquid					N/A

Refrigeration System 2 - Cooling Mode

	Pressure	Saturated Temperature	Line Temperature	Sub-cooling	Superheat
Discharge				N/A	N/A
Suction				N/A	
Liquid					N/A

Condenser Fans

☐ Alignment ☐ Check Rotation Nameplate Amps _____				
Number	hp	L1	L2	L3
1				
2				
3				
4				

Maintenance Log

This log must be kept with the unit. It is the responsibility of the owner and/or maintenance/service contractor to document any service, repair or adjustments. Jetson Service and Warranty Department is available to advise and provide phone support for proper operation and replacement parts. The responsibility for proper start-up, maintenance and servicing of the equipment falls to the owner and qualified licensed technician.

Entry Date	Action Taken	Name	Telephone

Literature Change History

June 2021
Initial version of document.

Jetson
Excellence in HVAC

www.JetsonHVAC.com

ACC Condenser and Condensing Unit Installation, Operation, & Maintenance

Factory Technical Support: 903-758-2900

Note: Before calling Technical Support, please have the model and serial number of the unit available.

Parts: For replacement parts, please contact your local Jetson Representative.