Installation, Operation, & Maintenance

IOM 75G03
Rev. B 11/25

WCX/WCR SERIES THROUGH THE WALL CONDENSING UNIT

ATTENTION:

Read all instructions thoroughly and retain all manuals for future reference.

COPYRIGHT

In keeping with its policy of continuous progress and product improvement, the First Co. / AE-Air reserves the right to make changes without notice.

The warranty shall be considered void unless the Startup & Performance Checklist is properly completed and submitted to the warrantor. In addition, any failure to install the unit in accordance with the manufacturer's published instructions and applicable codes shall render the warranty null and void. The manufacturer shall not be held liable for any damages, failures, or performance issues arising from improper installation, adjustment, or application of the equipment.

WARNING

Altering the product or replacing parts with non-authorized factory parts voids all warranty or implied warranty and may result in adverse operational performance and/or a possible hazardous safety condition to service personnel and occupants. Company employees and/or contractors are not authorized to waive this warning.

WARNING

Only personnel trained and qualified in the installation, adjustment, servicing, maintenance, or repair of the equipment described in this manual should perform service. The manufacturer is not responsible for any injury or property damage arising from improper service or procedures. In jurisdictions where licensing is required to service this equipment, only licensed personnel should perform the service.

Improper installation, adjustment, servicing, maintenance, or repair—or attempting to perform these tasks without proper training—may result in product damage, property damage, personal injury, or death. Service personnel assume responsibility for any injury or property damage resulting from improper procedures.

TABLE OF CONTENTS

SAFETY CONSIDERATIONS

1. READ THE ENTIRE MANUAL BEFORE STARTING THE INSTALLATION.
2. These instructions are intended as a general guide and do not supersede national, state, or local codes in any way.
3. Any product alteration, improper installation, or use of unauthorized parts will void all warranties expressed or implied and may result in poor performance, equipment malfunction, or hazardous conditions for service personnel and occupants. Company employees or contractors are not authorized to waive this warning.
4. This product should only be installed and serviced by a qualified, licensed, and factory authorized installer or service agency.
5. All "kits" and "accessories" used must be factory authorized when modifying this product. Refer to and follow the instructions provided with each kit or accessory during installation.

RECOGNIZE THE FOLLOWING SAFETY NOTATIONS THROUGHOUT THIS MANUAL AND POSTED ON THE EQUIPMENT:

WARNING

Indicates a potentially hazardous situation or unsafe practices that could result in severe personal injury or death and/or damage to property.

WARNING

ELECTRIC SHOCK HAZARD

This warning signifies potential electrical shock hazards that could result in personal injury or death.

CAUTION

Indicates a potentially hazardous situation that may result in minor or moderate personal injury.

IMPORTANT

Suggests important procedure steps to insure proper installation, reliability, or operation.

NOTE

Used to highlight suggestions, which may result in enhanced installation, reliability, or operation.

WARNING

FIRE OR EXPLOSION HAZARD

Failure to follow safety warnings exactly may result in property damage, hazardous operation, serious injury, or death. Improper servicing can also lead to dangerous conditions, injury, death, or property damage.

- Disconnect all electrical power to the unit before servicing.
- Label all wires prior to disconnecting controls and ensure correct reconnection.
- Verify proper operation after servicing.

	Service indicator; read technical manual.
	Operator's manual; operating instructions.
	Read the instructions.
	Warning; flammable materials.
	UN GHS flame symbol

NOMENCLATURE

1,2	3,4,5,6	7	8	9	10,11	12
24	**WCX2**	**B**	**B**	**2**	**00**	**F**

Unit Size
18 - 18,000 BTU/HR
24 - 24,000 BTU/HR
30 - 30,000 BTU/HR

Series
WCX2 - Cooling Only R-454B
WCR2 - Cooling Only R-32

Major Revision
B - A2L Initial Release

BRAND
F - First Co

OPTIONS
00 - None

Voltage
2 - 208-230/1-60

OPTIONS: Cabinet
A - 32" x 24" x 19"
B - 28" x 25.75" x 19"

Figure 1 – Model Nomenclature

ATTENTIONS, CAUTIONS, & WARNINGS

WARNING

Risk of fire. Flammable refrigerant used. To be repaired only by trained service personnel. Do not puncture refrigerant tubing.

Auxiliary devices which may be ignition sources shall not be installed in the ductwork, other than auxiliary devices listed for use with the specific appliance. See Instructions.

Dispose of refrigerant properly in accordance with federal or local regulations.

WARNING

When a Refrigerant Leak Detection System is installed, the unit must remain powered on at all times, except during service. The installer must verify that the refrigerant sensor is correctly installed and fully operational; failure to do so will void the warranty and may result in fire, property damage, or death.

WARNING

Exercise extreme caution to minimize the risk of refrigerant ignition when installing or servicing a system containing a flammable refrigerant. Control the work environment while potentially flammable vapors are present and inform all personnel on site of the hazards and required safety precautions. Do not work in confined spaces. Test the area for refrigerant using an intrinsically safe A2L leak detector before beginning work. Keep a dry powder or CO_2 fire extinguisher readily available. Use tools specifically designed for A2L refrigerants, and only non-sparking tools near A2L refrigerants. Open flames and other ignition sources must be absent except during brazing, which must only be performed on evacuated and nitrogen-purged refrigerant lines and components exposed to the atmosphere.

IMPORTANT

This appliance must be installed in a location that is not accessible to the general public.

This appliance is approved for INDOOR USE ONLY.

WARNING

These instructions are intended to assist qualified, licensed service personnel in the proper installation, adjustment, and operation of this unit. Read all instructions thoroughly before beginning installation or operation.

Failure to follow these instructions may result in improper installation, adjustment, service, or maintenance, which could lead to fire, electrical shock, property damage, personal injury, or death.

WARNING

ELECTRIC SHOCK HAZARD

Before servicing or performing maintenance on the system, turn OFF the main power to the unit. Failure to do so may result in electrical shock, causing personal injury or death.

WARNING

Electrical work for the installation of this appliance must comply with the National Electrical Code (NEC) and any applicable local or regional electrical and building codes.

In Canada, all electrical work must comply with CSA C22.1.

WARNING

Auxiliary devices that could serve as ignition sources must not be installed in the ductwork.

Examples of potential ignition sources include electrical switching devices and hot surfaces exceeding 1,292°F [700.0°C].

IMPORTANT

This unit is a partial-unit air conditioner designed in accordance with the partial-unit requirements of UL 60335-2-40. It must only be connected to a corresponding partial unit that has been verified as compliant with the applicable requirements of this standard.

ATTENTIONS, CAUTIONS, & WARNINGS (continued)

WARNING

Use multiple people when moving and installing these units. Failure to do so could result in injury or death.

WARNING

A2L refrigerants can become combustible if mixed with air at elevated temperature and/or pressure. Failure to follow this warning could result in property damage and personal injury or death.

WARNING

When soldering or brazing, always keep a fire extinguisher readily available. When working near valves or other sensitive components, use heat shields or wet rags to protect these parts from heat exposure. Failure to protect components during soldering or brazing can result in damage to valves and other critical parts, leading to equipment malfunction or unsafe operating conditions.

CAUTION

Always wear all appropriate personal protection equipment when installing and servicing these units.

WARNING

Do NOT modify this product or install non-authorized components. Doing so will void all warranties, may impair system operation and performance, and can create hazardous conditions for service personnel and occupants. No company employee or contractor is authorized to waive this requirement.

Compressor start assist devices (capacitor and start potential relay) may be required for installations with long line length, unusually high or low ambient operating conditions. Thermostatic expansion valves or any other situation which can lead to slow off cycle pressure equalization and excessive compressor starting problems.

Consult local building codes and current editions of the National Electrical Code (NEC) NFPA 70. In Canada, refer to current editions of the Canadian electrical code CSA CEC22.1.

This unit may be installed at altitudes up to 10,000 ft. [3,048 m].

CAUTION

When servicing this equipment, because of high pressures, make sure the reversing valve, expansion device, filter drier and other components are specifically designed for A2L refrigerant.

ONLY USE service equipment specifically designated for use with A2L.

CAUTION

When the unit is in operation components are rotating at high speeds and caution should be taken.

The manufacturer assumes no responsibility for equipment installed in violation of applicable codes. The information provided herein is intended to assist with the proper installation of the air-conditioning system. Improper installation may result in unsatisfactory performance, hazardous operating conditions, and voiding of the warranty. Review these instructions, as well as any documentation supplied with additional components required for the system, before beginning installation.

All materials in this shipment were inspected at the factory and released to the carrier in good condition. Upon receipt, immediately inspect all cartons for signs of mishandling or damage. Note any visible damage on the delivery receipt and conduct the inspection in the presence of the carrier's representative. If damage is identified, file a claim with the carrier without delay.

PHYSICAL DIMENSION

Physical Dimensions - BA Series (in) [cm]					
Unit Model	A	B	C	Liq/Suct. Line Conn. (SWEAT)	Approx. Ship Wt. (lbs)
18WC*2-BA* 24WC*2-BA* 30WC*2-BA*	32.25 [81.92]	24.0 [60.96]	19.0 [48.26]	3/8 [0.95] I.D. 3/4 [1.91] O.D.	200.0 [90.72]

Table 1 - Physical Dimensions - BA Series (in) [cm]

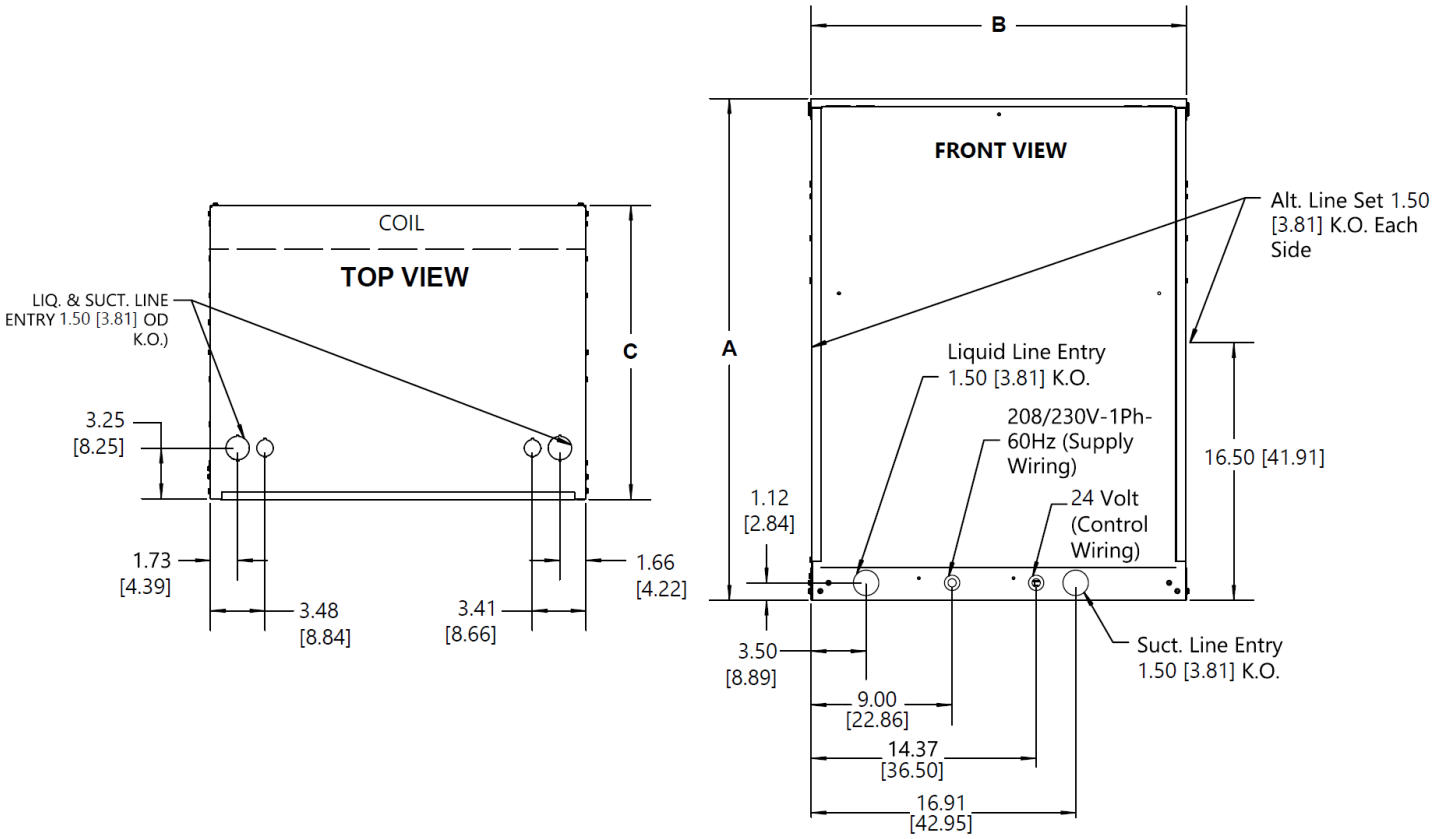

Figure 2 – Physical Dimensions - BA Series

Notes:

1. Dimensions are inches [cm].
2. Liquid line valve is located on the left side.
3. Suction line valve is located on the right side.

PHYSICAL DIMENSIONS (continued)

Physical Dimensions - BB Series (in) [cm]					
Unit Model	A	B	C	Liq/Suct. Line Conn. (SWEAT)	Approx. Ship Wt. (lbs) [kg]
18WC*2-BB*	28.25 [71.76]	26.0 [66.04]	19.0 [48.26]	3/8 [0.95] I.D. 3/4 [1.91] O.D.	200.0 [90.72]
24WC*2-BB*					
30WC*2-BB*					

Table 2 - Physical Dimensions - BB Series (in) [cm]

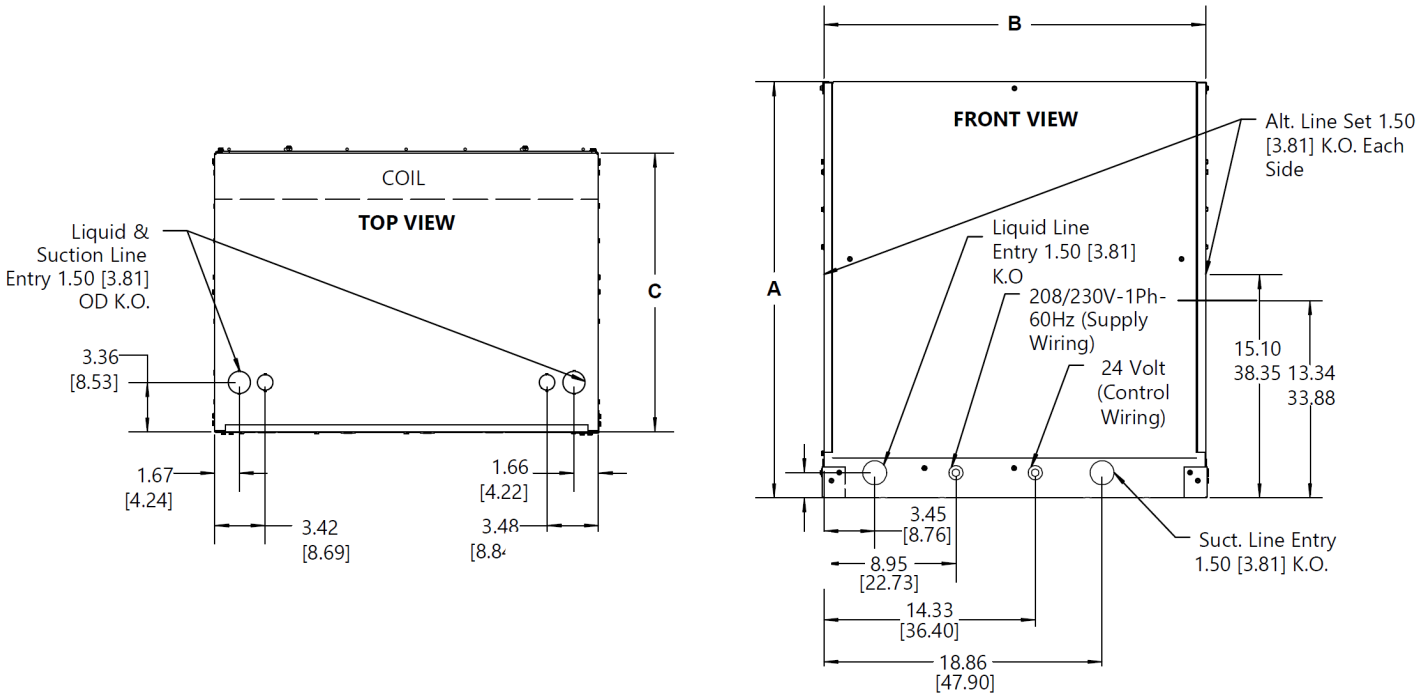

Figure 3 – Physical Dimensions - BB Series

Notes:

1. Dimensions are inches [cm].
2. Liquid line valve is located on the left side.
3. Suction line valve is located on the right side.

PHYSICAL DATA

BA AND BB SERIES

WCX2 & WCR2												
Model	BA Series						BB Series					
	WCX			WCR			WCX			WCR		
	18	24	30	18	24	30	18	24	30	18	24	30
Refrigerant	R-454B			R-32			R-454B			R-32		
Voltage	208-230/1-60											
Compressor Type (Qty)	Scroll [1]											

Table 3 - WCX2 & WCR2

Cooling Performance												
Model	BA Series						BB Series					
	WCX			WCR			WCX			WCR		
	18	24	30	18	24	30	18	24	30	18	24	30
Rated Capacity (BTU/H)	18,000	23,600	27,600	18,000	23,400	27,400	18,000	23,600	27,000	17,800	24,000	27,800
EER2	10.20	10.10	10.50	10.20	10.10	10.10	10.20	10.10	10.10	10.20	10.10	10.10
SEER2*	11.70	11.70	11.70	11.70	11.70	11.70	11.70	11.70	11.70	11.70	11.70	11.70
Sensible Heat Ratio	0.74	0.76	0.77	0.74	0.76	0.77	0.74	0.76	0.77	0.74	0.76	0.77
Rated SCFM	525.0	750.0	875.0	525.0	750.0	875.0	525.0	750.0	875.0	525.0	750.0	875.0
Note: *Coil rating only												

Table 4 - Cooling Performance

Operation Conditions			
Outdoor Ambient Operating Range (DB)	Cooling °F [°C]	Min.	60.0 [15.56]
		Max.	115.0 [46.11]

Table 5 - Operation Conditions

Physical Data								
Model			BA Series			BB Series		
			18WC*2-BA	24WC*2-BA	30WC*2-BA	18WC*2-BB	24WC*2-BB	30WC*2-BB
Condenser Fan Motor			PSC	PSC	ECM	PSC	PSC	ECM
Factory Refrigerant Charge	R-454B	lbs.	3.50	3.50	3.50	3.50	3.50	3.50
		kg	1.59	1.59	1.59	1.59	1.59	1.59
	R-32	lbs.	3.50	3.50	3.50	3.50	3.50	3.50
		kg	1.59	1.59	1.59	1.59	1.59	1.59
Operating Weight (lbs) [kg]			180.0 [81.65]					
Shipping Weight (lbs) [kg]			200.0 [90.72]					

Table 6 - Physical Data

ELECTRICAL DATA

Electrical Data 208/230V - 1PH - 60 Hz						
Unit Model	Compressor		Condenser Fan		Min. Cir. Ampacity (MCA)	Max. Overcurrent Protection (MOP)
	LRA	RLA	FLA	HP		
18WCX2-*	47.0	7.18	1.45	1/4	10.0	15.0
24WCX2-*	59.0	9.17	1.45	1/4	13.0	20.0
30WCX2-*	71.0	10.45	2.80	1/3	16.0	25.0
18WCR2-*	45.0	6.40	1.45	1/4	9.0	15.0
24WCR2-*	60.0	8.30	1.45	1/4	12.0	20.0
30WCR2-*	67.0	9.60	2.80	1/3	15.0	20.0

Table 7- Electrical Data 208/230V - 1PH - 60 Hz

INSTALLATION

UNIT LOCATION

CAUTION

A masonry wall opening must be properly constructed with a lintel for structural support. All wall openings must be flashed and sealed. The unit must be installed level, both front to back and side to side.

This unit is designed for through-the-wall installation with the coil surface exposed to the outside of the structure. Provide a wall opening large enough to slide the unit through and a framework capable of supporting the unit. This product is certified for through-the-wall, indoor, vertical position installation only. This appliance is not design certified for installation in mobile homes, recreational vehicles, or outdoors. A First Company approved wall sleeve must be used to install the unit.

Do not rely on the unit cabinet for wall support. Use the provided mounting angles to secure the cabinet to the framework on the inside surface of the opening. When attaching angles, ensure no screws penetrate refrigerant tubing inside the cabinet. Seal the opening around the unit with silicone or other high-grade, non-hardening exterior sealant to prevent rain leakage. (Refer to **Figure 4 – Typical Installation**). Do not block the drain holes at the bottom of the unit, as they allow rainwater drainage.

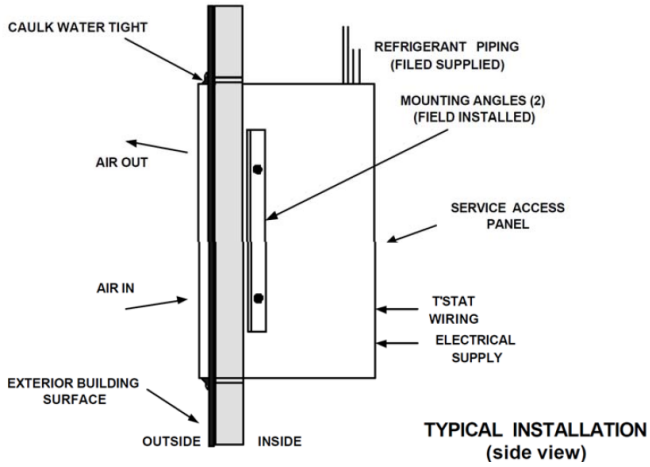

Figure 4 – Typical Installation (side view)

UNIT INSTALLATION

The WCX/WCR unit must be installed with the outside surface flush against the wall and the top of the cabinet level. Do not use the bottom pan to determine level, as it is pitched for drainage. An unlevel installation will result in improper condensate drainage, which can lead to water damage and operational issues.

Additionally, ensure that airflow to the condenser is unobstructed. Restricted airflow can cause reduced cooling efficiency, increased energy consumption, and potential equipment failure.

If architectural design requires installing the unit behind a decorative louver, ensure that airflow is not restricted and recirculation of hot discharge air does not occur, as this will reduce unit performance. A baffle may be necessary between the unit face and the louver to prevent recirculation. The louver should be as open as possible for optimal performance.

When installing multiple WCX/WCR units in the same area, maintain a minimum spacing of 36.0 in. [1 m] vertically and 18.0 in. [0.5 m] horizontally between units to minimize condenser air recirculation.

For units installed inside a building or in return air spaces, seal any cabinet openings that could allow hot condenser air into the conditioned space. Failure to seal these openings may cause erratic operation and, in driving rain conditions, allow water infiltration.

In cold climates, units installed indoors or in return air spaces may require exterior cabinet insulation to reduce heat loss and prevent condensation on cabinet surfaces, which could lead to water damage.

The unit includes a drain pan beneath the coil to collect condensate during heating mode. Connect this pan to a drain using the provided 3/4 in. female PVC fitting. A hole is located at the rear of the unit for routing the drain line. Retain the plastic snap plug for later use.

CAUTION

Seal all exposed joints to prevent water and outside air infiltration into the closet. Failure to do so can cause improper unit operation and may result in damage to the unit and surrounding property.

If airflow is reduced or recirculated, unit performance will decrease, leading to premature equipment failure and voiding all warranties.

The drain line will be exposed to freezing conditions. To prevent freezing, apply heat tape and insulation to the drain line both inside and outside the cabinet. Failure to protect the drain line from freezing will result in ice formation inside the cabinet and on the building exterior, creating hazardous conditions.

A2L REFRIGERANT LINE

Tools required for installing and servicing A2L units.
Manifolds sets:

- Up to 600.0 PSIG High Side [41.0 bar]
- Up to 250.0 PSIG Low Side [17.0 bar]

WARNING

This unit is factory-charged with 3.5 lbs [1.6 kg] of refrigerant for safe storage. Additional A2L refrigerant will be required during installation to achieve proper system operation. Refer to the charging instructions in the installation manual for correct charge adjustments.

WARNING

When soldering or brazing, always keep a fire extinguisher readily available. When working near valves or other sensitive components, use heat shields or wet rags to protect these parts from heat exposure. Failure to protect components during soldering or brazing can result in damage to valves and other critical parts, leading to equipment malfunction or unsafe operating conditions.

WARNING

Do not exceed the maximum operating pressure listed on the unit rating plate.

IMPORTANT

Do not open the service valves until the evaporator section and all connecting tubing have been installed, leak-tested, and properly evacuated. Service valves are to be opened only when the system is fully prepared for operation. Premature opening may result in refrigerant loss, contamination, or system damage.

WARNING

Always recover all refrigerant before performing any repairs on a sealed air-conditioning system and before final disposal of the unit. Ensure that all service ports are used and that every refrigerant flow-control device—including expansion valves and solenoid valves—is fully open. Failure to follow these procedures may result in serious injury or death.

WARNING

FIRE OR EXPLOSION HAZARD

Failure to follow these instructions could result in personal injury, death, or property damage.

Do not attempt any sealed system repair without first recovering the entire refrigerant charge. A2L refrigerant mixed with oil can ignite when exposed to a brazing torch flame. Always recover the full refrigerant charge from both the high and low sides of the system, and purge the sealed system with nitrogen before brazing any component or tubing.

All piping must be protected from physical damage during operation and service and comply with all applicable national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. Field joints must remain accessible for inspection before being covered or enclosed.

When routing lines from the evaporator coil to the condensing unit, keep them as short as possible, with a maximum allowable length of 50.0 ft [15.0 m]. Knockouts are provided at both upper corners and on each side of the unit cabinet for line entry; only remove the openings needed and seal any unused openings to prevent air leakage, which can reduce airflow over the condenser coil. Service valves are designed for sweat connections—avoid overheating the valve by using a wet cloth for protection during brazing. Ensure that line routing does not obstruct removal of the motor or fan through the access panel or block access panel removal.

The suction line must be insulated to prevent condensation, using insulation with a minimum wall thickness of 0.38 in. [9.50 mm] and an adequate vapor barrier, extending a few inches [50.0–100.0 mm] inside the unit cabinet to contain any condensation safely.

PURGING & LEAK TESTING

WARNING

FIRE OR EXPLOSION HAZARD

Do not use open flames or any potential ignition sources when performing leak checks on refrigerant tubing or components. Failure to comply with this instruction may result in personal injury, death, or property damage.

Connect the suction and liquid hoses from the gauge manifold to the service ports on the service valves. A hole covered by a plastic snap plug is provided for gauge hose entry, allowing the unit access panel to be reinstalled without disturbing the hoses. Once the gauge hoses are removed, ensure the plastic plug is replaced to cover the service hole. Connect a cylinder of dry nitrogen to the gauge manifold and open both the liquid and suction manifold valves. After the system reaches balanced pressure, perform a leak test on all sweat fittings. If any leaks are detected, repair them and repeat the procedure.

WARNING

It is a violation of federal law to discharge refrigerant into the atmosphere. Always use approved reclaiming methods and certified equipment when installing or servicing this unit. This service must be performed by a qualified agency. A sealed refrigerant system is designed to be closed and self-contained and typically requires no routine maintenance.

WARNING

FIRE OR EXPLOSION HAZARD

Never use an open flame to test for refrigerant leaks. Always use a commercially available soap solution specifically designed for leak detection to check all connections. Failure to follow this instruction may result in fire or explosion, causing property damage, serious injury, or loss of life.

Strict adherence to these safety warnings is required to prevent severe injury, death, or property damage.

EVACUATION & SYSTEM PREPARATION PROCEDURE

1. Determine Evacuation Requirement
   Evacuation of the condensing unit is not necessary unless the unit has lost its refrigerant charge. If the charge is intact, leave the service valves closed.
2. Recover Refrigerant
   Recover the refrigerant from the evaporator coil and connecting tubing only.
3. Connect Vacuum Pump
   Attach the vacuum pump to the charging port on the gauge manifold.
4. Start Evacuation
   Start the vacuum pump and open the suction hand valve on the gauge manifold.
5. Achieve Target Vacuum
   Allow the pump to operate until a vacuum of 300 microns is reached.
6. Check Pressure Stability
   Shut off the vacuum pump and monitor the system pressure.
   - If the pressure rises above 500.0 microns, restart the pump, and continue evacuation until the system can maintain 500.0 microns or lower.
7. Secure System
   Close the hand valves on the gauge manifold and disconnect the vacuum pump.
8. Open Service Valves
   Open the service valves on the condensing unit.
9. Verify Readiness
   The refrigeration system is now prepared for normal operation.

CHARGING

WARNING

- It is **illegal** to release refrigerant into the atmosphere. Refrigerant released into an enclosed space can displace oxygen, leading to unconsciousness and death.
- If an indoor refrigerant leak is suspected, thoroughly ventilate the area before beginning any work.
- Do not purge or allow refrigerant to be released into an interior space.
- Contact with liquid refrigerant can cause frostbite and blindness. Avoid skin contact with liquid refrigerant; always wear protective goggles and gloves when handling refrigerants. Seek immediate medical attention if refrigerant contacts skin or eyes.
- Never burn refrigerant, as this produces highly toxic gases.
- Only EPA-certified technicians are permitted to handle refrigerants.
- In Canada, technicians must hold ODP/ODS certification to handle refrigerants.
- Follow all applicable EPA regulations.
- Explosion risk: Recover refrigerant only into cylinders specifically designed and intended for this purpose.
- Do not use a damaged or expired refrigerant cylinder.
- Do not apply flame or excessive heat to a refrigerant cylinder.
- Do not fill a refrigerant cylinder beyond 80% of its rated capacity.
- Do NOT use a refrigerant cylinder for any purpose other than its intended design.
- Use recovery equipment rated for the specific refrigerant being recovered.
- Earth-ground refrigerant cylinders before use.

WCX/WCR condensing units must be connected to evaporators equipped with a thermostatic expansion valve (TXV) specifically designed and calibrated for A2L refrigerant. All charging and charge adjustments must be performed using the subcooling method. Although the outdoor unit is factory pre-charged, the refrigerant charge must be verified and adjusted if necessary.

WCX/WCR units are factory charged for 15.0 ft [4.60 m] of refrigerant line length; for lines exceeding this length, add 0.6 oz of refrigerant per additional foot, and for shorter lines, remove refrigerant accordingly. After adjustments for line length, finalize the charge by confirming subcooling to ensure proper system performance.

PARTIAL REFRIGERANT CHARGE

The total refrigerant charge is indicated on the unit rating plate. For partial system charging, minor adjustments can be made using the subcooling and superheat method. Alternatively, the entire refrigerant charge may be recovered and weighed back in according to the total system charge listed on the rating plate.

After charging, allow the system to operate for 20 to 30 minutes to stabilize before performing measurements.

Check subcooling at the outdoor unit to confirm a proper liquid seal at the expansion valve. This measurement should be taken 2.0 in. [5.08 cm] to 4.0 in. [10.16 cm] above the WCX/WCR cabinet by recording the liquid line temperature and high-side pressure. Under outdoor conditions of 80.0°F [26.67°C] to 95.0°F [35.0°C], the system should achieve a subcooling level of 11.0°F [-11.67°C] to 13.0°F [-10.56°C] at the outdoor unit.

Superheat should be measured at the same distance from the suction service valve and should remain stable within 12.0°F [-11.11°C] to 16.0°F [-8.89°C]. If superheat is unstable, increase the system charge by one ounce, recheck superheat, and continue adding refrigerant incrementally until stability is achieved.

NOTE

Subcooling and superheat readings are most accurate when the conditioned space has reached normal, comfortable operating conditions.

If the condensing unit loses its refrigerant charge, the entire system must be evacuated and any leaks repaired before recharging. When recharging, begin by weighing in an amount of refrigerant equal to the charge specified on the unit nameplate. After the initial charge is added, verify system performance by checking subcooling and adjust the charge as necessary to achieve proper operating conditions.

ELECTRICAL

WARNING

Do not supply power to the unit with the compressor terminal box cover removed. Never bypass or disable any safety devices. The unit cabinet must maintain an uninterrupted, unbroken ground connection to reduce the risk of electrical shock, which can result in severe injury or death. Use copper conductors only, and ensure all parts and panels are properly installed before operating the unit. Failure to follow these warnings may lead to serious injury or death.

The electrical installation must comply with the National Electrical Code (NEC) and all applicable local codes and ordinances. A dedicated branch circuit should be provided for this unit, and a disconnecting means must be installed within sight of the unit and easily accessible to service personnel. Field wiring must meet local and national fire, safety, and electrical standards, and the voltage supply should remain within the limits specified on the unit's rating plate. If the voltage is incorrect, contact the local power company for correction. The unit rating plate also provides guidance on the recommended circuit protection device, as well as information on minimum circuit ampacity and maximum circuit breaker size.

NOTE

A compressor time delay relay may be necessary and should be field-installed if rapid cycling of the compressor occurs.

IMPORTANT

Electrical work for the installation of this appliance must comply with the National Electrical Code (NEC) and any applicable local or regional electrical and building codes.

In Canada, all electrical work must comply with CSA C22.1.

CAUTION

Operating the unit on improper line voltage is considered abuse and may compromise reliability and performance; always verify the voltage against the unit rating plate. Do not install a system where voltage or phase imbalance exceeds permissible limits. If low-voltage conditions exist, a Start Assist Device may be required. Because transformers are multi-voltage, it is essential to consult both the unit wiring diagram and the specified voltage to ensure correct connections and safe operation.

THERMOSTAT WIRING

The thermostat should be located on an interior wall in a larger room, away from supply duct draft. Position the thermostat back plate against the wall so that it appears level and so the thermostat wires protrude through the middle of the back plate mounting holes and drill holes with a 3/16 in. [5.0 mm] bit. Install supplied anchors and secure plate to the wall.

Use 18 AWG wire with color-coded insulation rated for at least 35.0°C for runs up to 100.0 ft [30.48 m], and use 16 AWG wire for lengths exceeding 100.0 ft [30.48 m]. Install a thermostat cable with a minimum of two wires between the condensing unit and the indoor unit. Pigtail leads are provided at the condensing unit; make all connections using wire nuts and secure them with tape for reliability.

WARNING

Transformers are multi-voltage. It is crucial to refer to the unit wiring diagram, the transformer wiring diagram, and the unit voltage to ensure proper connections and safe operation.

OPERATION & MAINTENANCE

CAUTION

Contact with metal edges and corners can result injury. Protective gloves should be worn when handling. Exercise caution when installing and servicing unit.

WARNING

ELECTRIC SHOCK HAZARD

Verify that all motor connections are secure and match the unit's wiring diagram. ECM motors receive line-voltage power continuously, so ensure power is fully disconnected before performing any service.

CAUTION

Do not use compressors to evacuate the air-conditioning system. Pulling a vacuum through the compressor can cause internal electrical arcing, leading to damage or failure. Compressor and sealed-system tubing components may also be extremely hot.

WARNING

- Always wear eye protection.
- When the fan coil is operating, some components run at high speeds—do not touch any rotating parts with your hands or tools.
- Reinstall and secure all electrical and service access panels in their proper locations.
- Remove all tools, equipment, and debris from the surrounding area.
- Inspect the entire unit to ensure it is clean.

WARNING

Disconnect all power to the unit before servicing field wiring or removing the control package. Ensure that the disconnecting means is within sight of and readily accessible from the unit. Lock out and tag all switches with an appropriate warning label. Failure to follow this procedure can result in electrical shock, fire, personal injury, or death.

Keep the interior of the unit clean and ensure the drain holes in the base pan are open to allow proper rain drainage.

Maintain a clean condenser coil—any restriction to condenser airflow can significantly reduce system performance.

WARNING

Do not use any method to accelerate defrosting or cleaning other than those recommended by the manufacturer.

Store the appliance in an area free of continuously operating ignition sources (such as open flames, gas appliances, or electric heaters).

Do not pierce or burn the unit.

Refrigerants may not have a detectable odor.

Discharging refrigerant into the atmosphere is a violation of federal law —use proper reclaiming procedures and equipment during installation or service. All refrigerant handling should be performed by a qualified service agency. The sealed refrigerant system is closed and self-contained, and typically requires no routine maintenance.

INITIAL COIL CLEANING

For units with less than 100 operational hours, the coils may not have had sufficient time to "season." Clean the coils using a coil cleaning spray, which is available at most hardware stores, or a mild surfactant, such as dish soap mixed with warm water, to remove oils and residues left from the manufacturing process.

Unit Operating Range (°F) [°C]		
Condition	Cooling	
	Min	Max
Outdoor DB	60.0 [15.60]	115.0 [46.10]

Table 8- Unit Operating Range (°F) [°C]

CAUTION

Failure to keep the condensing coil clean and free of obstructions can lead to system damage and may create hazardous operating conditions.

OPERATION & MAINTENANCE (continued)

PREVENTATIVE MAINTENANCE

To ensure maximum performance and extend the service life of the equipment, a formal schedule of regular maintenance should be established and strictly followed.

QUALIFICATION OF PERSONNEL

All service, maintenance, and repair work shall be performed only by qualified technicians who have been certified by nationally recognized training organizations or manufacturers accredited to teach the applicable national competency standards as required by governing legislation.

Technicians must possess and maintain documented proof of competency, such as a valid certificate of qualification, demonstrating their ability to service this appliance properly and safely.

WORK AREA SAFETY CHECKS

Before beginning any work on the appliance, perform safety inspections to ensure the risk of igniting released gases is minimized. All work shall be conducted under controlled conditions to reduce the likelihood of flammable gas or vapor presence during servicing or maintenance.

All personnel working in or near the area must be informed of the nature of the work being performed and the associated safety precautions. Work in confined spaces must be strictly avoided.

REFRIGERANT PRESENCE AND SAFETY CHECKS

Before and during any work, the area must be inspected with an approved refrigerant detector to identify the presence of potentially toxic or flammable atmospheres. Ensure the leak detection equipment is specifically rated for the refrigerant in use—non-sparking, properly sealed, or intrinsically safe.

If any hot work is to be performed on the refrigeration equipment or related components, appropriate fire suppression equipment—such as a dry powder or CO_2 extinguisher—must be readily available near the work area.

Personnel working on refrigeration systems must not use any ignition sources that could result in fire or explosion hazards. All potential ignition sources, including open flames, sparks, or smoking materials, must be kept at a safe distance from the installation, repair, removal, or disposal area where refrigerant may be released.

Before beginning work, survey the surrounding area to confirm the absence of flammable materials and ignition risks. Clearly post and enforce “NO SMOKING” signage in all applicable work zones.

VENTILATED WORK AREA

Before opening the refrigeration, system or performing any hot work, confirm that the area is either outdoors or adequately ventilated. Proper ventilation must be maintained throughout the duration of the work to ensure the safe dispersion of any released refrigerant. Whenever possible, ventilation should be directed to exhaust refrigerant vapors safely to the outside atmosphere, away from occupied or enclosed spaces.

INSPECTION OF REFRIGERATING EQUIPMENT

When replacing electrical components, ensure that all parts are properly rated, suitable for their intended purpose, and meet the specified requirements. Always adhere to the manufacturer’s maintenance and service guidelines. If uncertainty arises, contact the manufacturer’s technical department for clarification or assistance.

For installations utilizing flammable refrigerants, the following checks must be performed:

- Verify that the refrigerant charge corresponds appropriately to the room size in which refrigerant-containing components are installed.
- Confirm that ventilation systems and outlets are functioning correctly and are free from obstructions.
- Ensure that all equipment markings and safety labels are clearly visible and legible; any damaged or missing markings must be replaced.
- Check that refrigerant piping and components are located and protected to prevent exposure to corrosive substances, unless the materials are inherently resistant to corrosion or adequately coated for protection.

OPERATION & MAINTENANCE (continued)

INSPECTION OF ELECTRICAL DEVICES AND SEALED ELECTRICAL COMPONENTS

All repair and maintenance work involving electrical components must begin with comprehensive safety checks and visual inspections. If any condition is identified that could compromise safety, do not connect electrical power to the circuit until the issue has been fully corrected. If immediate correction is not possible but temporary operation is required, implement an appropriate interim solution, and promptly report the condition to the equipment owner to ensure all parties are informed.

Initial Safety Checks shall include:

- Confirm that all capacitors are fully discharged using safe procedures to prevent arcing or sparking.
- Verify that no live electrical components or wiring are exposed during charging, refrigerant recovery, or purging operations.
- Ensure continuity of the grounding (earth) bond throughout the system.
- Any sealed electrical component found to be damaged, malfunctioning, or compromised must be replaced in full—repairs are not permitted.

CABLING INSPECTION

Verify that all cabling is protected from wear, corrosion, excessive pressure, vibration, sharp edges, and other potentially damaging environmental factors. Consider the long-term effects of aging and continuous vibration from equipment such as compressors or fans to ensure reliable and safe operation.

REMOVAL AND EVACUATION OF FLAMMABLE REFRIGERANTS

When opening the refrigerant circuit for repairs or maintenance, standard service procedures shall be observed. However, additional precautions are required when handling flammable refrigerants (A2L, A3, etc.) to ensure safety.

The following best practices shall be strictly followed:

- Recover the refrigerant charge in accordance with all applicable local, state, and national regulations.
- Purge the circuit with inert gas (such as oxygen-free nitrogen); this step is optional for A2L refrigerants.
- Evacuate the system if required (optional for A2L refrigerants).
- If a flame is to be used to open the circuit (e.g., for brazing), the system shall be continuously flushed with inert gas during the process.
- The circuit may then be opened by cutting or brazing.

The recovered refrigerant must be stored only in approved recovery cylinders if venting is not permitted by law. For systems containing flammable refrigerants, purge with oxygen-free nitrogen to render the system safe. This process may need to be repeated several times to ensure complete removal of refrigerant. Compressed air or oxygen shall never be used for purging refrigerant systems.

For appliances using flammable refrigerants, purging shall involve:

1. Breaking the vacuum in the system with oxygen-free nitrogen.
2. Pressurizing to working pressure, then venting to atmosphere.
3. Pulling a vacuum again (optional for A2L refrigerants).
4. Repeating this sequence until no refrigerant remains in the system.

After the final nitrogen charge, the system shall be vented down to atmospheric pressure before any work begins.

The vacuum pump outlet shall be located away from potential ignition sources, and adequate ventilation shall be provided throughout the process.

OPERATION & MAINTENANCE (continued)

CHARGING PROCEDURES

In addition to standard refrigerant charging practices, the following safety and operational requirements shall be observed when handling flammable or A2L refrigerants:

- Prevent cross-contamination: Ensure that different refrigerants are not mixed when using charging equipment. Hoses and lines shall be kept as short as practical to minimize the volume of refrigerant they contain.
- Cylinder positioning: Refrigerant cylinders shall be positioned and secured in accordance with manufacturer instructions to prevent tipping, leakage, or damage.
- System grounding: Confirm that the refrigeration system is properly grounded (earthed) prior to introducing any refrigerant charge.
- System labeling: Upon completion of charging, the system shall be clearly labeled to identify the type and amount of refrigerant charged, if not already marked.
- Avoid overcharging: Exercise extreme care not to overfill the refrigeration system. Overcharging may result in excessive pressure, reduced performance, or potential safety hazards.

Before recharging, the system shall be pressure-tested using an appropriate inert purging gas to confirm system integrity. After charging, the system must be leak-tested before commissioning to ensure there are no leaks. A final verification leak test shall be performed prior to leaving the site.

DECOMMISSIONING

Before decommissioning any equipment containing refrigerant, the technician shall be fully familiar with the unit design, refrigerant circuit, and all associated safety requirements. Decommissioning shall only be performed by qualified personnel following recognized industry and environmental best practices.

It is mandatory that all refrigerants be safely recovered and properly handled in accordance with local, national, and international regulations. Prior to initiating this procedure, obtain oil and refrigerant samples if laboratory analysis or reuse certification may be required.

Ensure that electrical power is available to operate recovery equipment before beginning.

A. **Preparation**:
   1. Review the unit's operation, electrical schematics, and service history to ensure complete familiarity with the system.
   2. Electrically isolate the system by disconnecting and locking out all power sources.
   3. Before beginning recovery operations, confirm that:
      i. Suitable mechanical handling equipment (e.g., lifting devices or trolleys) is available for refrigerant cylinders
      ii. All required personal protective equipment (PPE) is available and worn properly.
      iii. The recovery operation will be continuously supervised by a qualified technician.
      iv. Recovery equipment and cylinders comply with applicable design and safety standards.

B. **Recovery Process:**
   1. Pump down the refrigerant system, if possible, to minimize the amount of refrigerant in the active circuit.
   2. If achieving a vacuum is not possible, install a manifold system to enable refrigerant recovery from multiple points within the circuit.
   3. Place each recovery cylinder on calibrated weighing scales prior to initiating recovery to monitor fill levels accurately.
   4. Start the recovery unit and operate it strictly in accordance with the manufacturer's operating instructions.
   5. Do not exceed 80% of the rated liquid volume capacity of the recovery cylinder.
   6. Under no circumstances shall the maximum working pressure (MWP) of the cylinder be exceeded, even temporarily.

C. **Completion:**
   1. Upon completion of refrigerant recovery:
      i. Close all isolation valves on the system and recovery cylinders.
      ii. Clearly label cylinders with the type and quantity of refrigerant recovered.
      iii. Remove recovery equipment and filled cylinders from the site promptly.
   2. Ensure all components containing refrigerant are sealed or capped to prevent leakage.
   3. Recovered refrigerant shall not be reused in another refrigeration or air-conditioning system unless it has been properly reclaimed, purified, and certified in accordance with applicable environmental standards.

OPERATION & MAINTENANCE (continued)

LABELING

Equipment must be clearly labeled to indicate that it has been decommissioned and fully emptied of refrigerant. Each label must include the date and the signature of the responsible person. For appliances containing flammable refrigerants, ensure that additional labels are affixed stating: “Contains Flammable Refrigerant.”

RECOVERY

When removing refrigerant from a system for servicing or decommissioning, it is considered best practice to ensure all refrigerants are removed safely. Follow these steps:

1. Use Appropriate Recovery Cylinders
   a. Transfer refrigerant only into approved recovery cylinders.
   b. Ensure you have enough cylinders to hold the entire system charge.
   c. Cylinders must be designated for the specific recovered refrigerant and clearly labeled.
   d. Each cylinder must have functioning pressure relief and shut-off valves.
2. Prepare Recovery Cylinders
   a. Empty cylinders should be evacuated and, if possible, cooled before recovery begins.
3. Check Recovery Equipment
   a. Equipment must be in good working order and suitable for flammable refrigerants.
   b. Keep the manufacturer’s instructions available for reference.
   c. Use calibrated weighing scales in good condition.
   d. Hoses should have leak-free disconnect couplings and be in good condition.
4. Handle Recovered Refrigerant Properly
   a. Process refrigerant according to local legislation using the correct recovery cylinder.
   b. Arrange the relevant waste transfer documentation.
   c. Do not mix refrigerants in recovery units or cylinders.
5. Compressor and Oil Removal
   a. Ensure compressors and oils are evacuated to an acceptable level so no flammable refrigerant remains in the lubricant.
   b. Do not heat the compressor body with an open flame or any ignition source.
   c. Drain oil safely following proper procedures.

REFRIGERANT DETECTION SENSOR (RDS) INFORMATION

Any field-installed wiring connected to the RDS must be at least 18 AWG with a minimum insulation thickness of 1.58 mm, or otherwise protected from damage.

The RDS is not intended for service or repair. In the event of a sensor failure, the system will enter mitigation mode. The failed sensor must be replaced by removing it and installing a new sensor. Only sensors specified by the appliance manufacturer may be used for refrigerant detection systems.

DUCTING

If an appliance using A2L refrigerants is connected via an air duct system to one or more rooms and is installed in a space smaller than the minimum area specified in the unit’s physical data table, or if the effective dispersal volume is less than 18.0 m^3 [636.0 ft^3], the following conditions shall apply:

- The room shall not contain continuously operating open flames (e.g., gas appliances) or other potential ignition sources, such as operating electric heaters or hot surfaces.
- A flame-producing device may be installed in the same space only if it is equipped with an effective flame arrestor.
- Auxiliary devices that may constitute an ignition source shall not be installed within the ductwork. Potential ignition sources include:
  - Hot surfaces with temperatures exceeding 430.0°C [806.0°F]
  - Electric switching devices

PIPING

All piping materials, routing, and installation shall incorporate adequate protection against physical damage during operation and servicing. Installation must comply with all applicable national and local codes and standards, including but not limited to ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, and CSA B52.

All field-fabricated joints shall remain fully accessible for inspection prior to being covered or enclosed.

WIRING DIAGRAMS

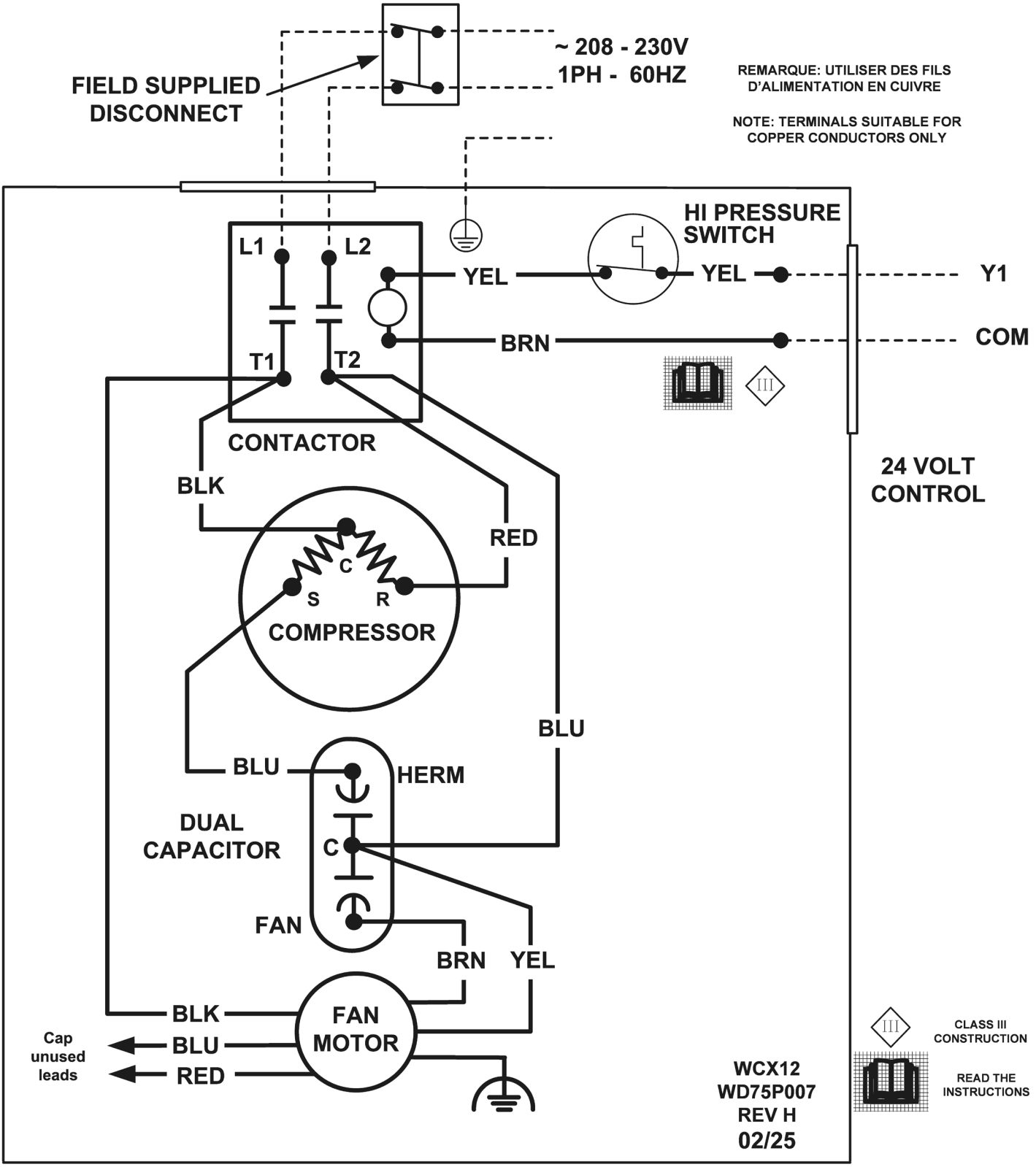

Figure 5 - WD75P007

WIRING DIAGRAMS (continued)

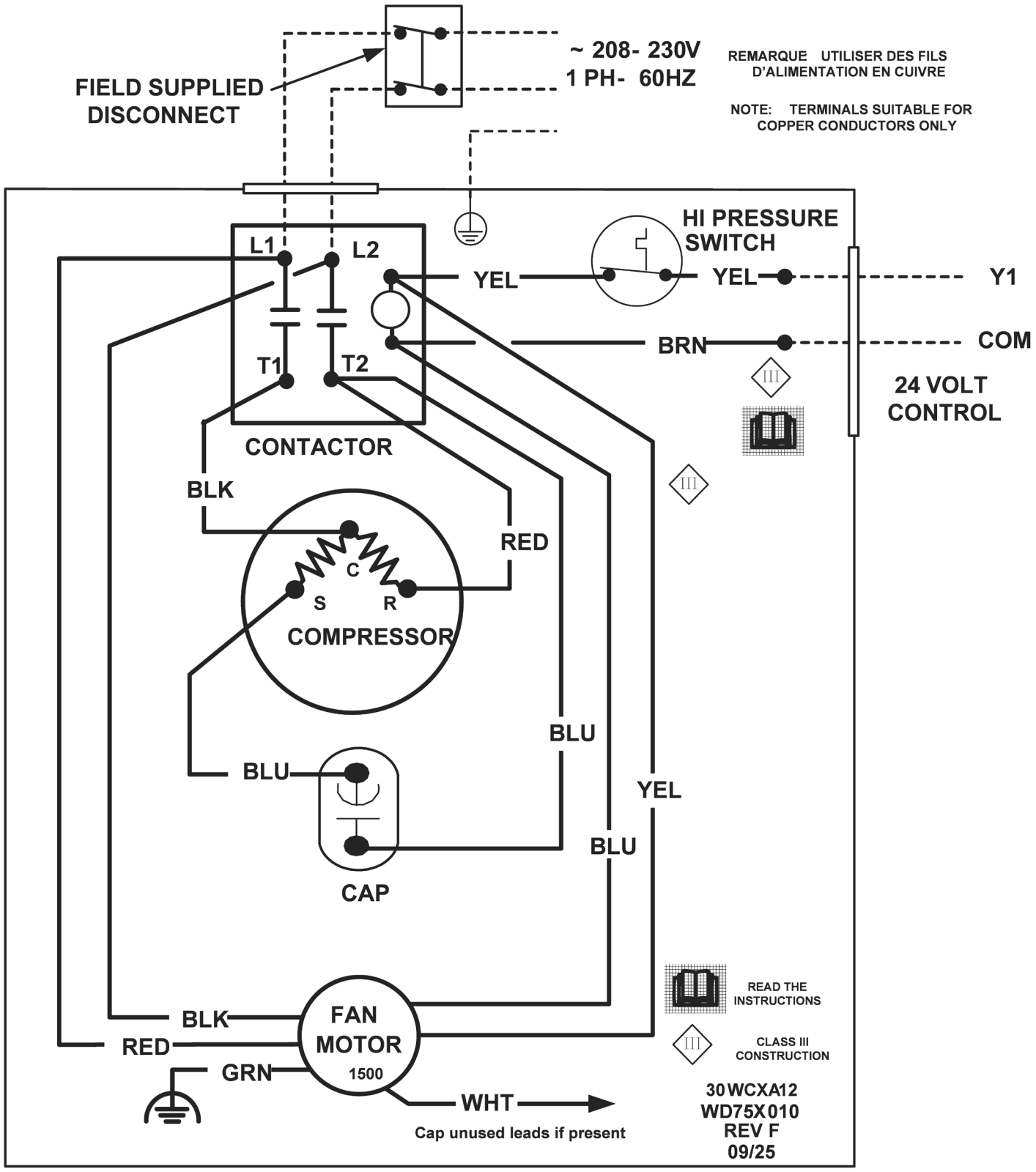

Figure 6 - WD75X010

PRE-START-UP CHECK LIST

Before start-up, all components must be thoroughly inspected. The system should be completely cleaned of construction debris and dirt. Coils should be cleaned using an industry-accepted method.

Prior to starting the unit:

1. Verify that the supply voltage matches the nameplate data.
2. Confirm that the unit is properly grounded.
3. With power OFF, check that the fan wheel rotates freely.
4. Ensure the unit is properly and securely installed.
5. Confirm the unit has the correct slope for water drainage.
6. Verify accessibility for future service.
7. Ensure all cabinet openings and wiring connections are tight and properly sealed.
8. Confirm that all access panels and cover plates are correctly installed and secured.

START-UP AND OPERATION DATA

For extended warranty registration, email form to **returns@firstco.com**
For startup assistance, email form to **techsupport@firstco.com**

CUSTOMER:_____ DATE:_____ STARTUP DATE:_____
ADDRESS:_____ PHONE #:_____ JOB #:_____
INSTALLING CONTRACTOR:_____ TECHNICIAN:_____
MODEL #:_____ SERIAL #: (ex: A-12-B-345678) _____

Air Handler Information:

Brand: _____ Model Number: _____ Serial Number: _____
Metering Device: Piston ☐ TXV Hard Shut-off ☐ TXV Rapid Bleed ☐

Multi Voltage: _____ Amps: _____
Cooling Speed: _____ Heating Speed: _____

Evaporator Coil Temperatures:

Evaporator Coil EAT Dry Bulb: _____ Evaporator Coil LAT Dry Bulb: _____ Delta: _____

Evaporator Coil EAT Wet Bulb: _____ Evaporator Coil LAT Wet Bulb: _____ Delta: _____

Condensing Unit:

Unit Voltage: _____ Compressor Voltage: _____
Amps: _____ Discharge Line Temp: _____

Min Circuit Amps (MCA): _____ Max Overcurrent Amps (MCO): _____
Breaker/Fuse Size: _____ Wire Size: _____

Start Kit: Yes ☐ No ☐ Recommended: Kickstart or similar kit with a potential relay only—do not use solid state kits.

Refrigerant Pressures/Temperatures: Outdoor Ambient Temp: _____

Low Side PSIG:_____ {Vapor Line Temp:___ **minus** Saturated Temp: ___ = ___ degrees of **Superheat**}

High Side PSIG:_____ {Saturated Temp:___ **minus** Liquid Line Temp: ___ = ___ degrees of **Sub-cooling**}

Proper start-up and operational checks must be performed on each installation and should include gathering all of the information listed above. When installing a WCX/WCR condensing unit with a new air handler it is recommended to choose the next larger size air handler than the condensing unit.
Example: When installing a 24 WCX/WCR, chose a 2.5-ton air handler (regardless of the brand) for best performance.

START-UP AND OPERATION DATA (continued)

For extended warranty registration, email form to **returns@firstco.com**
For startup assistance, email form to **techsupport@firstco.com**

PROBLEM SUMMARY

CORRECTIVE ACTIONS TAKEN

The warranty shall be considered void unless the Startup & Performance Checklist is properly completed and submitted to the warrantor. In addition, any failure to install the unit in accordance with the manufacturer's published instructions and applicable codes shall render the warranty null and void. The manufacturer shall not be held liable for any damages, failures, or performance issues arising from improper installation, adjustment, or application of the equipment.

ALTITUDE ADJUSTMENT FACTOR FOR MIN. ROOM AREA

Indoor equipment requirements are calculated at sea level. For installations at elevations of 800 meters or higher, adjust the minimum room area listed on or near the Serial Plate using the altitude adjustment factor shown below.

Altitude Correction Factor														
Altitude (m)	0 – 600.0	800.0	100.0	1,200	1,400	1,600	1,800	2,000	2,200	2,400	2,600	2,800	3,000	3,200
Altitude (ft)	0 – 1,968.50	2,625	3,281	3,970	4,693	5,349	5,906	6,562	7,218	7,874	8,530	9,186	9,843	10,499
Adj Factor (AF)	1.0	1.02	1.05	1.07	1.10	1.12	1.15	1.18	1.21	1.25	1.28	1.32	1.36	1.40

Table 9 - Altitude Correction Factor

NOTES

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www.firstco.com or www.ae-air.com