ELKP SERIES HEAT PUMP UNITS

The EL072KP (6 ton / 21.1 kW), EL090KP (7.5 ton / 26.4 kW), and EL120KP (10 ton / 35.2 kW) heat pump units are designed for R-454B, light commercial applications, with a remotely located blower-coil unit or a furnace with an add-on evaporator coil. ELKP model units are equipped with one dual speed scroll compressor. The ELKP heat pumps match with the ELKA blower-coil units. ELKP units are all three-phase.

NOTE - *The ELKP is a PARTIAL UNIT AIR CONDITIONER, complying with PARTIAL UNIT requirements in this standard, and must only be connected to other units that have been confirmed as complying to corresponding PARTIAL UNIT requirements of this Standard, UL 60335-2-40/ CSA C22.2 No. 60335-2-40, or UL 1995/CSA C22.2 No 236.*

This manual is divided into sections which discuss the major components, refrigerant system, charging procedure, maintenance and operation sequence.

Information in this manual is intended for qualified service technicians only. All specifications are subject to change. Procedures in this manual are presented as recommendations only and do not supersede or replace local or state codes.

⚠ WARNING

Improper installation, adjustment, alteration, service or maintenance can cause property damage, personal injury or loss of life. Installation and service must be performed by a licensed professional HVAC installer or equivalent, service agency, or the gas supplier.

⚠ IMPORTANT

The Clean Air Act of 1990 bans the intentional venting of refrigerant (CFCs, HCFCs and HFCs) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for noncompliance.

⚠ WARNING

Electric shock hazard! - Disconnect all power supplies before servicing.

Replace all parts and panels before operating.

Failure to do so can result in death or electrical shock.

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⚠ CAUTION

As with any mechanical equipment, contact with sharp sheet metal edges can result in personal injury. Take care while handling this equipment and wear gloves and protective clothing.

⚠ IMPORTANT

This unit must be matched with an indoor coil as specified with AHRI. For AHRI Certified system match-ups and expanded ratings, visit www.LennoxPros.com.

⚠ WARNING

To prevent serious injury or death:

1. Lock-out/tag-out before performing maintenance.
2. If system power is required (e.g., smoke detector maintenance), disable power to blower, remove fan belt where applicable, and ensure all controllers and thermostats are set to the “OFF” position before performing maintenance.
3. Always keep hands, hair, clothing, jewelry, tools, etc. away from moving parts.

⚠ WARNING

- Do not use means to accelerate the defrosting process or to clean, other than those recommended by the manufacturer.
- The appliance shall be stored in a room without continuously operating ignition sources (for example: open flames, an operating gas appliance, or an operating electric heater).
- Do not pierce or burn.
- Be aware that refrigerants may not contain an odor.

⚠ CAUTION

Servicing shall be performed only as recommended by the manufacturer.

⚠ WARNING

Ducts connected to an appliance shall not contain a potential ignition source

⚠ WARNING

Every working procedure that affects safety means shall only be carried out by competent persons. This appliance is not to be used by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. Children should be supervised to ensure they do not play with the appliance.

⚠ IMPORTANT

Ensure that the area is in the open or that it is adequately ventilated before breaking into the system or conducting any hot work. A degree of ventilation shall continue during the period that the work is carried out.

⚠ IMPORTANT

Verify cabling will not be subject to wear, corrosion, excessive pressure, vibration, sharp edges or any other adverse environmental effects.

⚠ IMPORTANT

Pipe work, including piping material, pipe routing, and installation shall include protection from physical damage in operation and service, and be in compliance with national and local codes and standards, such as ASHRAE 15, ASHRAE 15.2, IAPMO Uniform Mechanical Code, ICC International Mechanical Code, or CSA B52. All field joints shall be accessible for inspection prior to being covered or enclosed.

⚠ CAUTION

Under no circumstances shall potential sources of ignition be used in the searching for or detection of refrigerant leaks. A halide torch (or any other detector using a naked flame) shall not be used.

The following leak detection methods are deemed acceptable for all refrigerant systems.

Electronic leak detectors may be used to detect refrigerant leaks but, in the case of flammable refrigerants, the sensitivity may not be adequate, or may need re-calibration. (Detection equipment shall be calibrated in a refrigerant-free area.) Ensure that the detector is not a potential source of ignition and is suitable for the refrigerant used. Leak detection equipment shall be set at a percentage of the LFL of the refrigerant and shall be calibrated to the refrigerant employed, and the appropriate percentage of gas (25 % maximum) is confirmed. Leak detection fluids are also suitable for use with most refrigerants but the use of detergents containing chlorine shall be avoided as the chlorine may react with the refrigerant and corrode the copper pipe-work. If a leak is suspected, all naked flames shall be removed/extinguished. If a leakage of refrigerant is found which requires brazing, all of the refrigerant shall be recovered from the system, or isolated (by means of shut off valves) in a part of the system remote from the leak.

⚠ CAUTION

Some soaps used for leak detection are corrosive to certain metals. Carefully rinse piping thoroughly after leak test has been completed. Do not use matches, candles, flame or other sources of ignition to check for gas leaks.

⚠ WARNING

PARTIAL UNITS shall only be connected to an appliance suitable for the same refrigerant.

⚠ IMPORTANT

When breaking into the refrigerant circuit to make repairs – or for any other purpose – conventional procedures shall be used. However, for flammable refrigerants it is important that best practice be followed and, since flammability is a consideration, procedures such as safely remove refrigerant following local and national regulations, purging the circuit with inert gas, evacuating (optional for A2L), purging with inert gas (optional for A2L), or opening the circuit by cutting or brazing be adhered to. The refrigerant charge shall be recovered into the correct recovery cylinders if venting is not allowed by local and national codes. For appliances containing flammable refrigerants, the system shall be purged with oxygen-free nitrogen to render the appliance safe for flammable refrigerants.

This process might need to be repeated several times. Compressed air or oxygen shall not be used for purging refrigerant systems. For appliances containing flammable refrigerants, refrigerants purging shall be achieved by breaking the vacuum in the system with oxygen-free nitrogen and continuing to fill until the working pressure is achieved, then venting to atmosphere, and finally pulling down to a vacuum (optional for A2L). This process shall be repeated until no refrigerant is within the system (optional for A2L). When the final oxygen-free nitrogen charge is used, the system shall be vented down to atmospheric pressure to enable work to take place. Ensure that the outlet for the vacuum pump is not close to any potential ignition sources and that ventilation is available.

⚠ IMPORTANT

In addition to conventional charging procedures, the following requirements shall be followed.

- Ensure that contamination of different refrigerants does not occur when using charging equipment. Hoses or lines shall be as short as possible to minimize the amount of refrigerant contained in them.
- Cylinders shall be kept in an appropriate position according to the instructions.
- Ensure that the REFRIGERATING SYSTEM is earthed prior to charging the system with refrigerant.
- Label the system when charging is complete (if not already).
- Extreme care shall be taken not to overfill the REFRIGERATING SYSTEM.

Prior to recharging the system, it shall be pressure-tested with the appropriate purging gas. The system shall be leak tested on completion of charging, but prior to commissioning. A follow up leak test shall be carried out prior to leaving the site.

⚠ IMPORTANT

When removing refrigerant from a system, either for servicing or decommissioning, it is recommended good practice that all refrigerants are removed safely.

When transferring refrigerant into cylinders, ensure that only appropriate refrigerant recovery cylinders are employed. Ensure that the correct number of cylinders for holding the total system charge is available. All cylinders to be used are designated for the recovered refrigerant and labelled for that refrigerant (i. e. special cylinders for the recovery of refrigerant). Cylinders shall be complete with pressure-relief valve and associated shut-off valves in good working order. Empty recovery cylinders are evacuated and, if possible, cooled before recovery occurs.

The recovery equipment shall be in good working order with a set of instructions concerning the equipment that is at hand and shall be suitable for the recovery of all appropriate refrigerants including, when applicable, flammable refrigerants. In addition, a set of calibrated weighing scales shall be available and in good working order. Hoses shall be complete with leak-free disconnect couplings and in good condition. Before using the recovery machine, check that it is in satisfactory working order, has been properly maintained and that any associated electrical components are sealed to prevent ignition in the event of a refrigerant release. Consult manufacturer if in doubt.

The recovered refrigerant shall be returned to the refrigerant supplier in the correct recovery cylinder, and the relevant waste transfer note arranged. Do not mix refrigerants in recovery units and especially not in cylinders.

If compressors or compressor oils are to be removed, ensure that they have been evacuated to an acceptable level to make certain that flammable refrigerant does not remain within the lubricant. The evacuation process shall be carried out prior to returning the compressor to the suppliers. Only electric heating to the compressor body shall be employed to accelerate this process. When oil is drained from a system, it shall be carried out safely.

⚠ IMPORTANT

After completion of field piping for split systems, the field pipework shall be pressure tested with an inert gas and then vacuum tested prior to refrigerant charging, according to the following requirements;

– Field-made refrigerant joints indoors shall be tightness tested. The test method shall have a sensitivity of .2 oz. per year of refrigerant or better, under pressure.

No leak shall be detected.

⚠ IMPORTANT

Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimized.

⚠ IMPORTANT

Work shall be undertaken under a controlled procedure so as to minimize the risk of a flammable gas or vapor being present while the work is being performed.

⚠ IMPORTANT

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

⚠ IMPORTANT

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

⚠ IMPORTANT

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO^2 fire extinguisher adjacent to the charging area.

⚠ IMPORTANT

No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

⚠ IMPORTANT

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance.

The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

– the actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed;

– the ventilation machinery and outlets are operating adequately and are not obstructed;

– if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

– marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

– refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

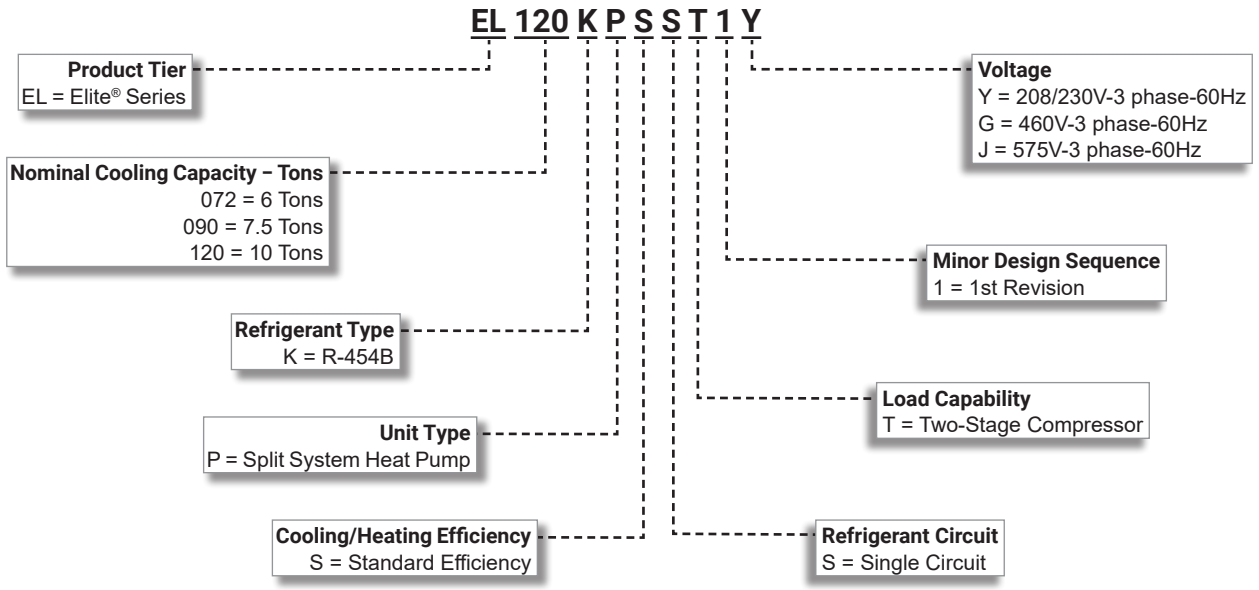
⚠ IMPORTANT

Sealed electrical components shall be replaced.

⚠ IMPORTANT

Intrinsically safe components must be replaced.

Model Identification



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SPECIFICATIONS

Model		EL072KPSST	EL090KPSST	EL120KPSST
Nominal Tonnage		6	7.5	10
Connections (sweat)	Liquid line (OD) - in.	5/8	5/8	5/8
	Suction line (OD) - in.	1-1/8	1-1/8	1-1/8
Refrigerant	Factory Charge	R-454B holding charge (2 lbs. per circuit)		
	Circuits	1	1	1
	[1] Field charge (25 ft. line set)	24 lbs. 4 oz. (includes holding charge)	23 lbs. 4 oz. (includes holding charge)	25 lbs. 8 oz. (includes holding charge)
Compressor Type (Number)		Two Stage Scroll (1)	Two Stage Scroll (1)	Two Stage Scroll (1)
Outdoor Coil	Net face area - ft.² Outer coil	29.3	29.3	34.2
	Inner coil	28.4	28.4	33.3
	Tube diameter - in.	3/8	3/8	3/8
	Rows	2	2	2
	Fins - in.	20	20	20
Outdoor Coil Fans	Diameter - in. (Number)	24 (2)	24 (2)	24 (2)
	Blades	3	3	4
	Motor HP (Number)	1/3 (2)	1/3 (2)	1/2 (2)
	Total air volume - cfm	8300	8300	10,300
	Rpm	1075	1075	1075
	Watts	830	830	1130

ELECTRICAL DATA

Line voltage data - 60Hz - 3 phase		208/230V	460V	575V	208/230V	460V	575V	208/230V	460V	575V
[2] Maximum overcurrent protection (MOCP) amps		45	20	15	60	25	20	60	30	25
[3] Minimum circuit ampacity (MCA)		29	14	10	39	17	14	38	21	17
Compressor (1)	Rated load amps	19.2	9.1	6.2	26.3	11	9.2	26.5	14.0	11.5
	Locked rotor amps	162.3	70.8	58.2	178.5	95.3	65	255	123	93.7
Outdoor Coil Fan Motor (2) (1 phase)	Full load amps (total)	2.4 (4.8)	1.3 (2.6)	1 (2)	2.4 (4.8)	1.3 (2.6)	1 (2)	3 (6)	1.5 (3)	1.2 (2.4)
	Locked rotor amps (total)	4.3 (8.6)	2.4 (4.8)	1.9 (3.8)	4.3 (8.6)	2.4 (4.8)	1.9 (3.8)	6 (12)	3 (6)	2.9 (5.8)

SOUND DATA

Model	Octave Band Sound Power Levels dBA, re 10^{-12} Watts Center Frequency - HZ							[1] Sound Rating Number (dBA)	[2] Estimated Sound Pressure Level at Distance From Unit (dBA at distance in ft.)				
	125	250	500	1000	2000	4000	8000		3	5	10	15	50
EL072KPSST	69	77	80	80	77	73	65	85	78	73	67	64	53
EL090KPSST	69	77	80	80	77	73	65	85	78	73	67	64	53
EL120KPSST	69	77	80	81	78	72	64	86	79	74	68	65	54

NOTE - The octave sound power data does not include tonal correction.

[1] Tested according to AHRI Standard 270-2008 test conditions. Sound rating Number is the overall A-Weighted Sound Power Level, (LWA), dB (100 Hz to 10,000 Hz).

[2] Estimated sound pressure level at distance based on AHRI Standard 275-2010 method for equipment located on the ground, roof, or on side of building wall with no adjacent reflective surface within 9.8 feet. Sound pressure levels will increase based on changes to assumptions. For other applications, refer to AHRI Standard 275.

OPTIONS / ACCESSORIES

Item	Order Number	EL072KPSST EL090KPSST	EL120KPSST
CABINET			
Combined Coil/Hail Guards	**13T30**	X	
	13T32		X
COOLING			
Low Ambient Control (0°F)	**37P63**	X	X
ELECTRICAL			
GFI Service Outlets — 15 amp non-powered, field-wired (208/230V, 460V only)	**74M70**	X	X
GFI Service Outlets — [1] 20 amp non-powered, field-wired (208/230V, 460V, 575V)	**67E01**	X	X
INDOOR AIR QUALITY			
Sensor - Wall-mount, off-white plastic cover with LCD display	**77N39**	X	X
Sensor - Wall-mount, off-white plastic cover, no display	**23V86**	X	X
Sensor - Black plastic case with LCD display, rated for plenum mounting	**87N52**	X	X
Sensor - Wall-mount, black plastic case, no display, rated for plenum mounting	**23V87**	X	X
CO_2 Sensor Duct Mounting Kit	**23Y47**	X	X
Aspiration Box - for duct mounting non-plenum rated CO_2 sensor (**77N39**)	**90N43**	X	X

[1] Canada requires a minimum 20 amp circuit. Select 20 amp, non-powered, field wired GFI.

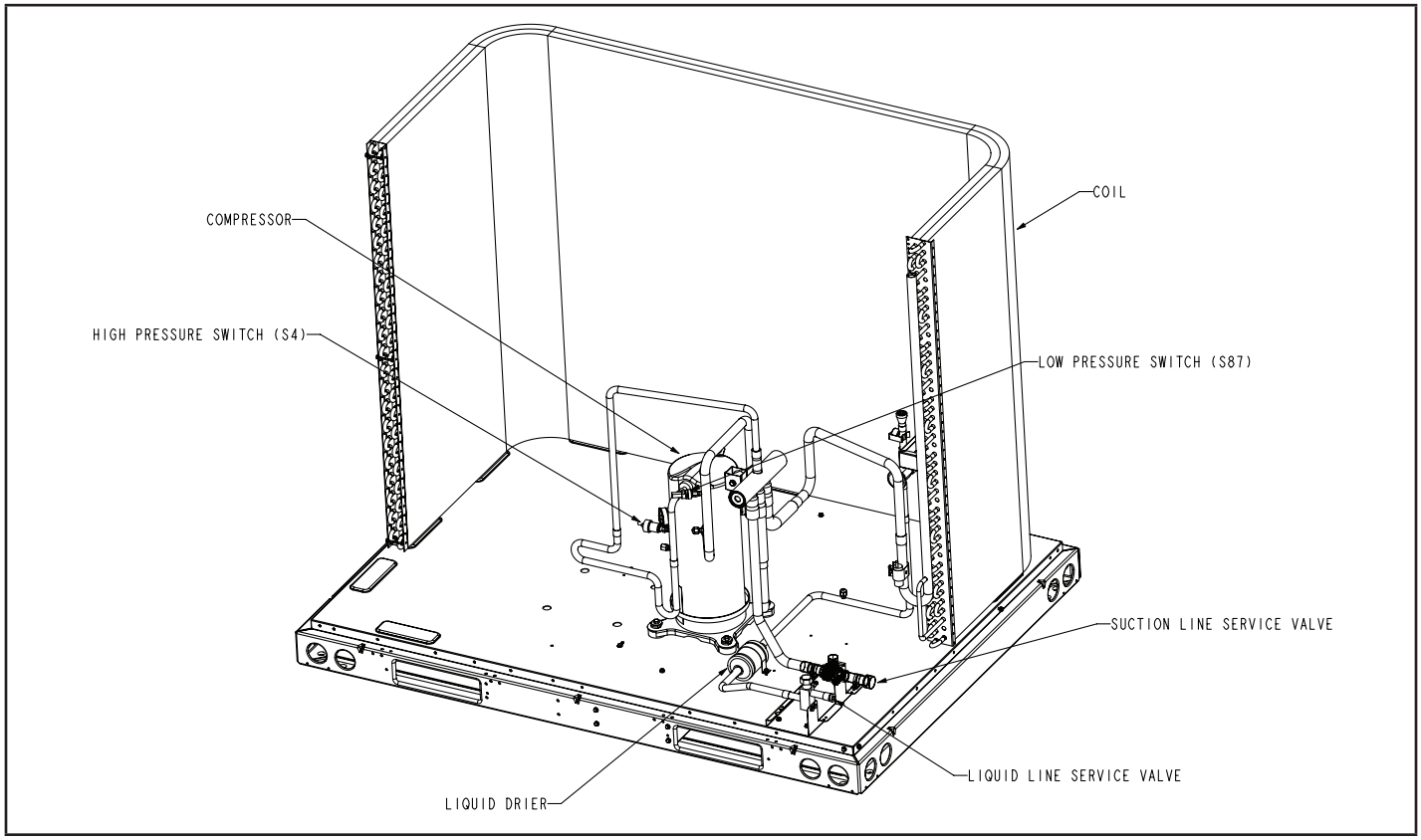
NOTE - The catalog and model numbers that appear here are for ordering field installed accessories only.

O - Factory Installed with extended lead time.

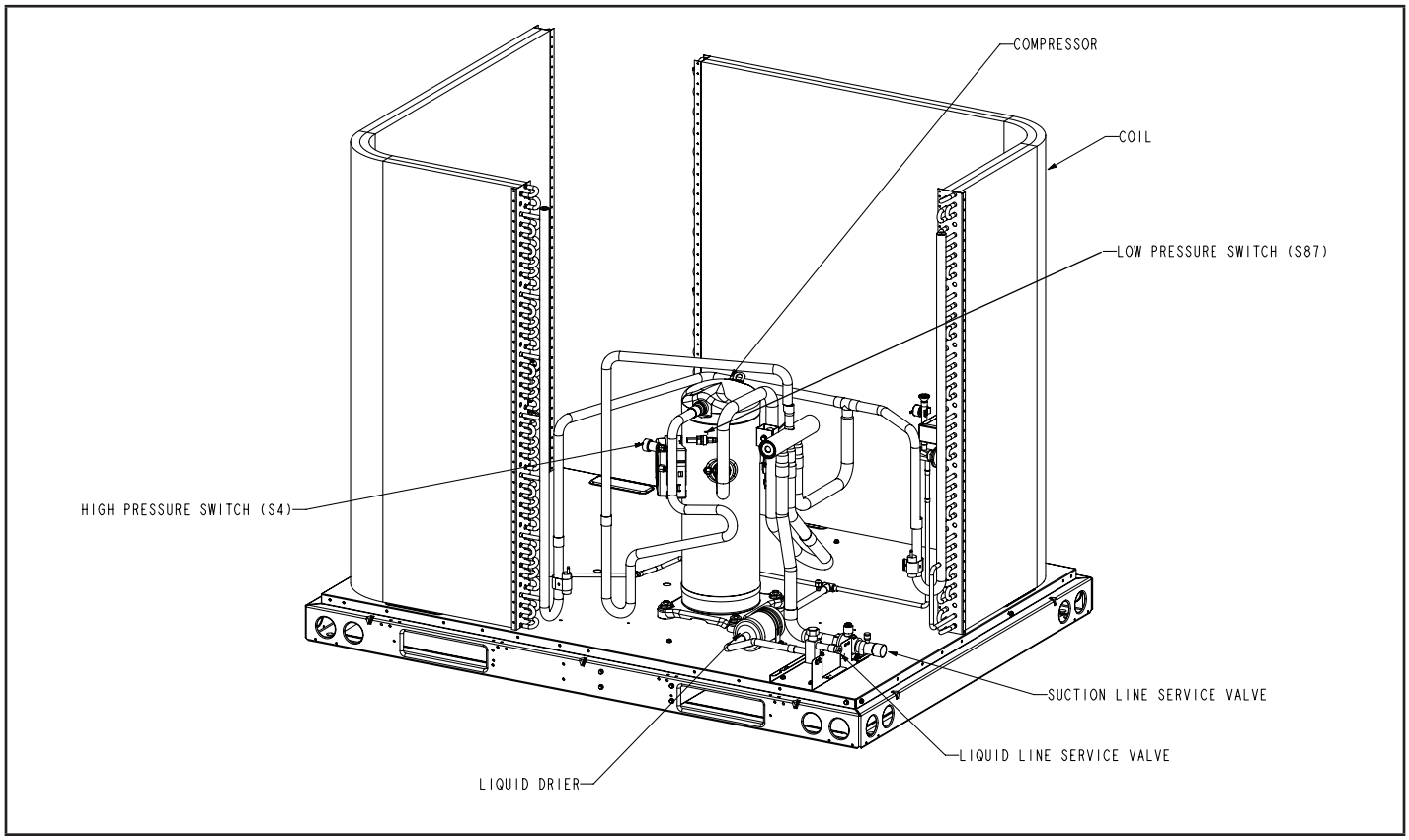
X - Field Installed

Unit Plumbing Parts Arrangement

EL072KP/EL090KP



EL120KP



⚠ WARNING

ELECTROSTATIC DISCHARGE (ESD) Precautions and Procedures	Electrostatic discharge can affect electronic components. Take care during unit installation and service to protect the unit's electronic controls. Precautions will help to avoid control exposure to electrostatic discharge by putting the unit, the control and the technician at the same electrostatic potential. Touch hand and all tools on an unpainted unit surface before performing any service procedure to neutralize electrostatic charge.

I-UNIT COMPONENTS

The heat pump components are shown in figures on page 8.

A-Control Box Components

The heat pump control box components are shown in FIGURE 1.

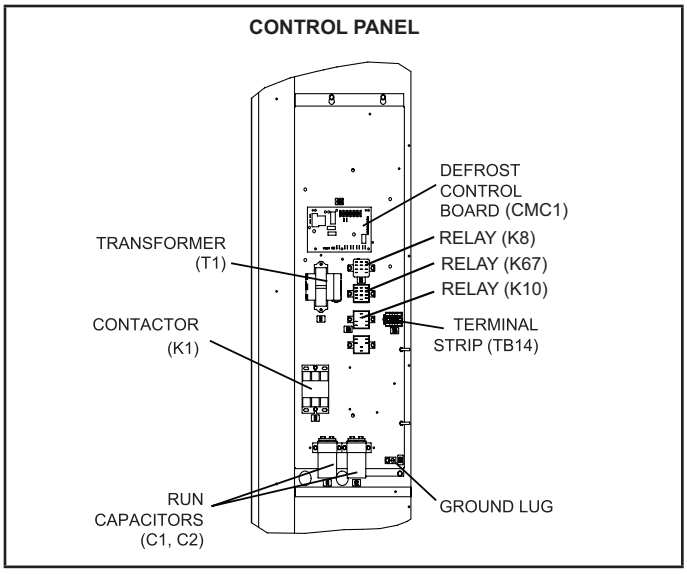


FIGURE 1

1 - Transformer T1

All models use a single line voltage to 24VAC transformer mounted in the control box. Transformer T1 supplies power to control circuits in the unit. The transformer is rated at 90VA and is protected by a 6.0 amp circuit breaker (CB8). CB8 is internal to the transformer. The 208/230 (Y) voltage transformers use two primary voltage taps as shown in FIGURE 2, while 460 (G) and 575 (J) voltage transformers use a single primary voltage tap.

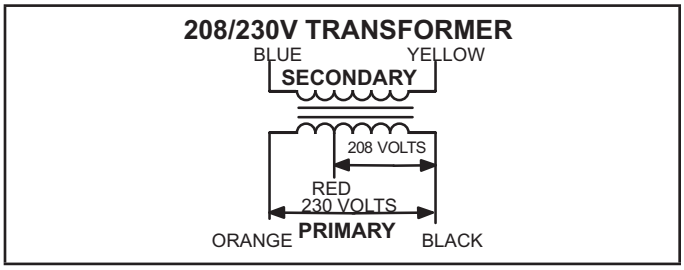


FIGURE 2

***NOTE** – 208 volt units are field wired with the red wire connected to control transformer. 230 volt units are factory wired with the orange wire connected to control transformer primary.*

2 - Condenser Fan Capacitors C1 and C2

All units use single-phase condenser fan motors. Motors are equipped with a fan run capacitor to maximize motor efficiency. Condenser fan capacitors C1 and C2 assist in the start up of condenser fan motors B4 and B5. Capacitor ratings are on condenser fan motor nameplates.

3 - Compressor Contactor K1 (all units)

All compressor contactors are three-pole-double break contactors with a 24V coil. K1 energizes compressor B1 in all units.

4 - Transfer Relay K8

Transfer relay K8 ensures that the compressor will operate during all modes of operation by completing the Y1 circuit to the CMC1 defrost control board. When there is a demand for cooling, the N.C. K8-2 contacts complete the Y1 circuit to the CMC1 defrost board. When there is a demand for heating, K8 relay coil energizes, using K8-2 N.O. contacts to complete the Y1 circuit to the CMC1 defrost control board and the K8-3 N.O. contacts to energize the K67 relay.

5 - Terminal Strip TB14 (all units)

TB14 terminal strip distributes 24V power from the thermostat to control box components.

6 - Defrost System

The defrost system includes a defrost thermostat and a defrost control.

DEFROST THERMOSTAT S6 (ALL), S9 (120 ONLY)

The defrost thermostat is located on the liquid line between the check/expansion valve and the distributor. When the defrost thermostat switch senses coil temperature at set point or lower (072/090 - 35°F ± 4°F; 120 - 42°F ± 6°F), its contacts close and send a signal to the defrost control board to start the defrost timing. It also terminates defrost when the liquid line warms up to its set point (072/090 - 60°F ± 5°F; 120 - 70°F ± 5°F) and its contacts open.

DEFROST CONTROL BOARD CMC1

The defrost control board includes the combined functions of a time/temperature defrost control, defrost relay, time delay, diagnostic LEDs, and a terminal strip for field wiring connections.

The control provides automatic switching from normal heating operation to defrost mode and back. During compressor cycle (defrost thermostat is closed, calling for defrost, the control accumulates compressor run times at 30, 60, or 90 minute field adjustable intervals. If the defrost thermostat is closed when the selected compressor run time interval ends, the defrost relay is energized and defrost begins.

DEFROST CONTROL TIMING PINS

Each timing pin selection provides a different accumulated compressor run time period for one defrost cycle. This time period must occur before a defrost cycle is initiated. The defrost interval can be adjusted (T1–30, T2–60, T3–90). The maximum defrost period is 14 minutes and cannot be adjusted.

NOTE – Defrost control part number is listed near the P1 timing pins. Units with defrost control **100269-07** have a factory default setting of 90 minutes.

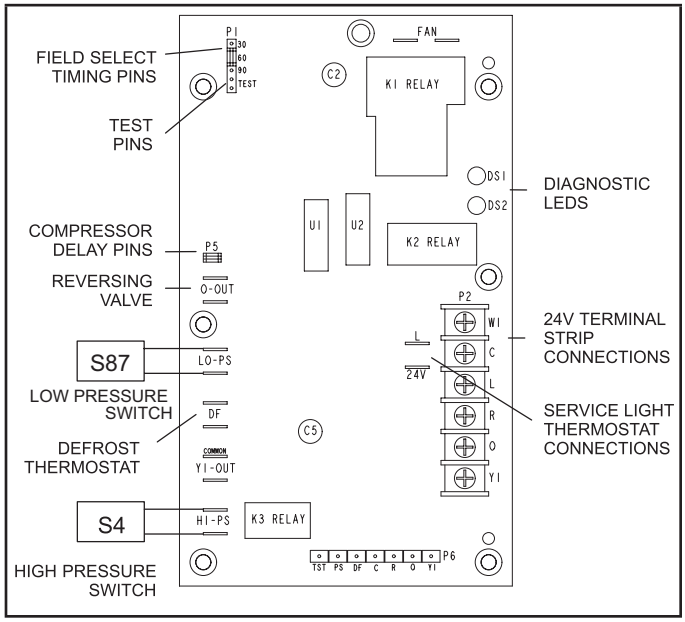


FIGURE 3

A TEST option is provided for troubleshooting. **The TEST mode may be started any time the unit is operating in the heating mode and the defrost thermostat is closed or jumpered.** If the jumper is in the TEST position at power-up, the control will ignore the test pins. When the jumper is placed across the TEST pins for two seconds, the control will enter the defrost mode. If the jumper is removed before an additional 5-second period has elapsed (7 seconds total), the unit will remain in defrost mode until the defrost thermostat opens or 14 minutes have passed. If the jumper is not removed until after the additional 5-second period has elapsed, the defrost will terminate and the test option will not function again until the jumper is removed and reapplied.

COMPRESSOR DELAY

The defrost board has a field-selectable function to reduce occasional sounds that may occur while the unit is cycling in and out of the defrost mode. When the compressor delay jumper is removed, the compressor will be cycled off for 30 seconds going in and out of the defrost mode.

***NOTE** – The 30-second compressor feature is ignored when jumper is installed on TEST pins.*

TIME DELAY

The timed-off delay is five minutes long. The delay helps protect the compressor from short-cycling in case the power to the unit is interrupted or a pressure switch opens. The delay is bypassed by placing the timer select jumper across the TEST pins for 0.5 seconds.

***NOTE** – The board must have a thermostat demand for the bypass function.*

PRESSURE SWITCH CIRCUITS

The defrost control includes two pressure switch circuits. The factory-installed high pressure switch (S4) wires are connected to the board's HI PS terminals (FIGURE 3). The board also includes LO PS terminals to accommodate a field-provided low (or loss-of-charge) pressure switch (S87).

During a single thermostat cycle, the defrost control will lock out the unit after the fifth time that the circuit is interrupted by any pressure switch that is wired to the control board. In addition, the diagnostic LEDs will indicate a pressure switch lockout after the fifth occurrence of an open pressure switch. The unit will remain locked out until power is broken then remade to the control or until the jumper is applied to the TEST pins for 0.5 seconds.

NOTE** – The defrost control board ignores input from the loss-of-charge switch terminals during the TEST mode, during the defrost cycle, during the 90-second start-up period, and for the first 90 seconds each time the reversing valve switches heat/cool modes. **If the TEST pins are jumpered and the 5-minute delay is being bypassed, the LO PS terminal signal is not ignored during the 90-second start-up period.

SERVICE LIGHT CONNECTION

The defrost control board includes terminal connections for a service light thermostat which provides a signal that activates the room thermostat service light during periods of inefficient operation.

⚠ IMPORTANT

After testing has been completed, properly reposition test jumper across desired timing pins

DIAGNOSTIC LEDS

The defrost board uses two LEDs for diagnostics. The LEDs flash a specific sequence according to the diagnosis. See TABLE 1.

TABLE 1

DS2 Green	DS1 Red	Condition
OFF	OFF	Power problem
Simultaneous Slow Flash		Normal operation
Alternating Slow Flash		5-min. anti-short cycle delay
Fault and Lockout Codes		
OFF	Slow Flash	Loss-of-Charge Fault
OFF	ON	Loss-of-Charge Lockout
Slow Flash	OFF	High Pressure Fault
ON	OFF	High Pressure Lockout
Shaded entries apply to demand boards only.		

B-COOLING COMPONENTS

⚠ WARNING

Refrigerant can be harmful if it is inhaled. Refrigerant must be used and recovered responsibly.

Failure to follow this warning may result in personal injury or death.

1 - Compressor

All units use scroll compressors.

Compressor consists of two involute spiral scrolls matched together to generate a series of crescent shaped gas pockets between them.

During compression, one scroll remains stationary while the other scroll orbits around it.

Gas is drawn into the outer pocket, the pocket is sealed as the scroll rotates. As the spiral movement continues, gas pockets are pushed to the center of the scrolls. Volume between the pockets is simultaneously reduced.

When pocket reaches the center, gas is now high pressure and is forced out of a port located in the center of the fixed scrolls.

During compression, several pockets are compressed simultaneously resulting in a smooth continuous compression cycle. Continuous flank contact, maintained by centrifugal force, minimizes gas leakage and maximizes efficiency.

Scroll compressor is tolerant to the effects of slugging and contaminants. If this occurs, scrolls separate, allowing liquid or contaminants to be worked toward the center and discharged.

Low gas pulses during compression reduce operational sound levels.

Compressor motor is internally protected from excessive current and temperature.

Compressor is installed in the unit on resilient rubber mounts for vibration-free operation.

See ELECTRICAL section or compressor nameplate for compressor specifications.

All Compressors are Two Stage Models

A 24-volt DC solenoid valve inside the compressor controls staging. When the 3-way solenoid is energized it moves the lift ring assembly to block the ports and the compressor operates at full-load or 100% capacity. When the solenoid is de-energized the lift ring assembly moves to unblock the compressor ports and the compressor operates at part-load or approximately 67% of its full-load capacity.

The “loading” and “unloading” of the two stage scroll is done “on the fly” without shutting off the single-speed compressor motor between stages.

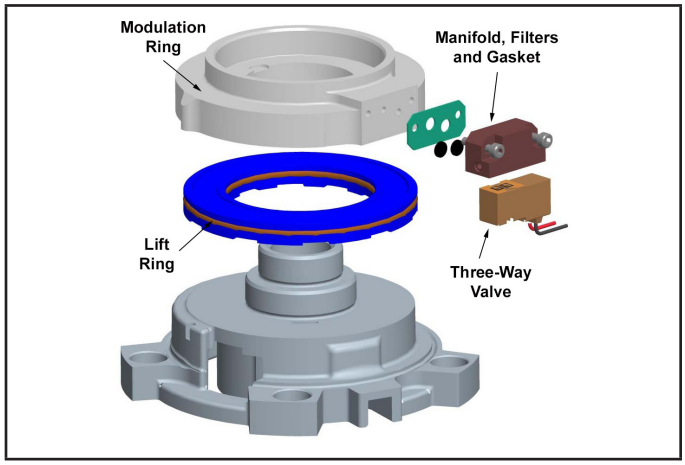


FIGURE 4. Two-Stage Scroll Compressor

2 - Two Stage Compressor Solenoid (L34) Resistance Check

Resistance check: Measure the resistance from the end of one molded plug lead to either of the two female connectors in the plug. One of the connectors should read close to zero ohms while the other should read infinity. Repeat with other wire. The same female connector as before should read zero while the other connector again reads infinity. Reverse polarity on the ohmmeter leads and repeat. The female connector that read infinity previously should now read close to zero ohms. Replace plug if either of these test methods don’t show the desired results.

3 - Crankcase Heater HR1 (all units)

All units use a belly-band type crankcase heater. Heater HR1 is wrapped around compressor B1. HR1 assures proper compressor lubrication at all times.

4 - High Pressure Switch S4

The high pressure switch is a auto-reset SPST N.C. switch which opens on a pressure rise. The switch is located on the compressor discharge line and is wired to the defrost control board CMC1. When discharge pressure rises to 640 ± 10 psig (4413 ± 69 kPa) the switch opens and the compressor is de-energized through the CMC1. The switch will close when discharge pressure drops to 475 ± 20 psig (3275 ± 138 kPA).

5 - Low Pressure Switch (S87)

The loss-of-charge switch is a auto-reset SPST N.C. switch which opens on a pressure drop. The switch is located on the suction line and is wired to the defrost control board CMC1. When suction line pressure drops to 40 ± 5 psig the switch opens and the compressor is de-energized through the CMC1. The switch will close when pressure rises to 90 ± 5 psig.

6 - Filter Drier (all units)

All units have a filter drier that is located in the liquid line of each refrigerant circuit at the exit of each condenser coil. The drier removes contaminants and moisture from the system.

7 - Reversing Valve L1 (all units)

A reversing valve with an electromechanical solenoid is used to reverse refrigerant flow during unit operation. L1 is energized during cooling demand and defrost. See figures on page 8.

8 - Condenser Fans B4 and B5

See page 6 for the specifications on the condenser fans used in the units. All condenser fans have singlephase motors. The units are equipped with two condenser fans. The fan assembly may be removed for servicing by removing the fan grill, unplugging the motor then loosening the motor bracket. The assembly will lift out.

II- REFRIGERANT SYSTEM

A- Lineset

Field refrigerant piping consists of liquid and suction lines connecting the condensing unit and the indoor unit. Liquid and suction service valves are located in a compartment at the corner of the unit below the control box.

Piping can be routed directly from the service valves or field supplied elbows can be added to divert the piping as required.

Refer to TABLE 2 for field-fabricated refrigerant line sizes for runs up to 50 linear feet (15 m).

TABLE 2. Refrigerant Line Sizes for Runs Up to 50 Linear Feet

Unit	Liquid Line	Suction Line
EL072KP / EL090KP	5/8” (16mm)	1-1/8” (29mm)
EL120KP	5/8" (16mm)	1-1/8” (29mm)

B-Service Valves

When servicing or repairing HVAC components, ensure caps and fasteners are appropriately tightened. TABLE 3 lists torque values for typical service and repair items.

TABLE 3
Torque Requirements

Part	Recommended Torque	
Service valve cap	8 ft.-lb.	11 NM
Sheet metal screws	16 in.-lb.	2 NM
Machine screws #10	28 in.-lb.	3 NM
Compressor bolts	80 in.-lb.	9 NM
Gauge port seal cap	8 ft.-lb.	11 NM

USING MANIFOLD GAUGE SETS

When checking the system charge, use a manifold gauge set that features low-loss anti-blow back fittings. See FIGURE 6 for a typical manifold gauge connection setup.

Manifold gauge sets used with R-454B refrigerant systems must be capable of handling the higher system operating pressures. The gauges should be rated for use with pressures of 0 - 800 on the high side and a low side of 30" vacuum to 250 psi with dampened speed to 500 psi.

Gauge hoses must be rated for use at up to 800 psi of pressure with a 4000 psi burst rating.

OPERATING SERVICE VALVES

The liquid and vapor line service valves are typically used for removing refrigerant, flushing, leak testing, evacuating, checking charge and charging.

⚠ IMPORTANT

Only use Allen wrenches of sufficient hardness (50Rc - Rockwell Harness Scale minimum). Fully insert the wrench into the valve stem recess.

Service valve stems are factory-torqued (from 9 ft-lbs for small valves, to 25 ft-lbs for large valves) to prevent refrigerant loss during shipping and handling. Using an Allen wrench rated at less than 50Rc risks rounding or breaking off the wrench, or stripping the valve stem recess.

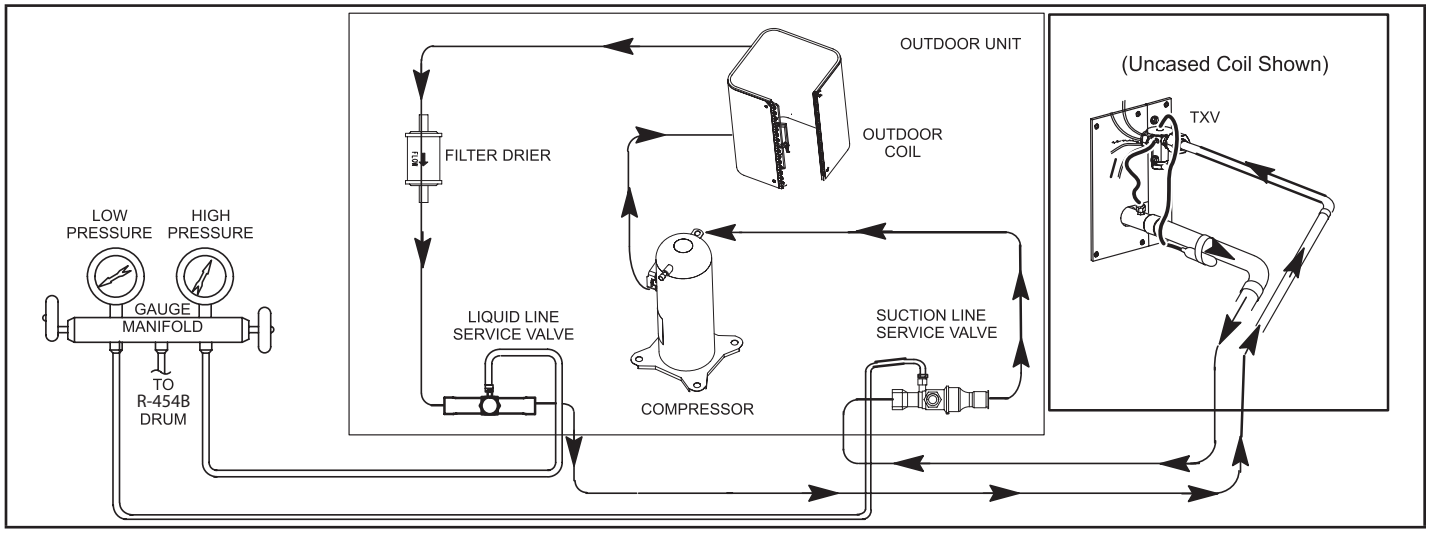


FIGURE 6

Each valve is equipped with a service port which has a factory-installed valve stem.

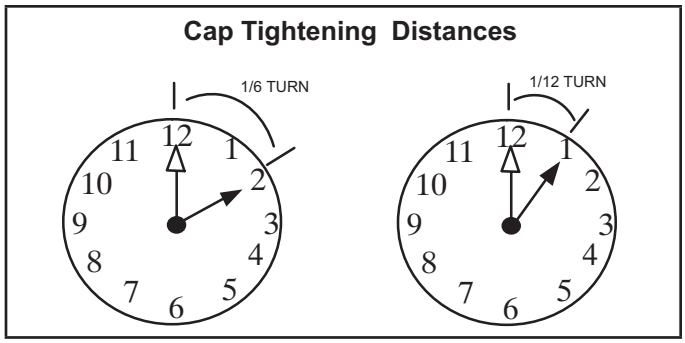


FIGURE 5

⚠ IMPORTANT

To prevent stripping of the various caps used, the appropriately sized wrench should be used and fitted snugly over the cap before tightening.

To Access Angle-Type Service Port:

A service port cap protects the service port core from contamination and serves as the primary leak seal.

1 - Remove service port cap with an appropriately sized wrench.

2 - Connect gauge to the service port.

6 - When testing is completed, replace service port cap and tighten as follows:

- *With Torque Wrench*: Finger tighten and then tighten per TABLE 3.
- *Without Torque Wrench*: Finger tighten and use an appropriately sized wrench to turn an additional 1/6 turn clockwise as illustrated in FIGURE 5.

To Open Liquid Line Service Valve:

1 - Remove stem cap with an adjustable wrench.

2 - Using service wrench and 5/16" hex head extension if needed (part #49A71) back the stem out counterclockwise until the valve stem just touches the retaining ring.

3 - Replace stem cap. Tighten finger tight, then tighten an additional 1/6 turn. Do not over torque.

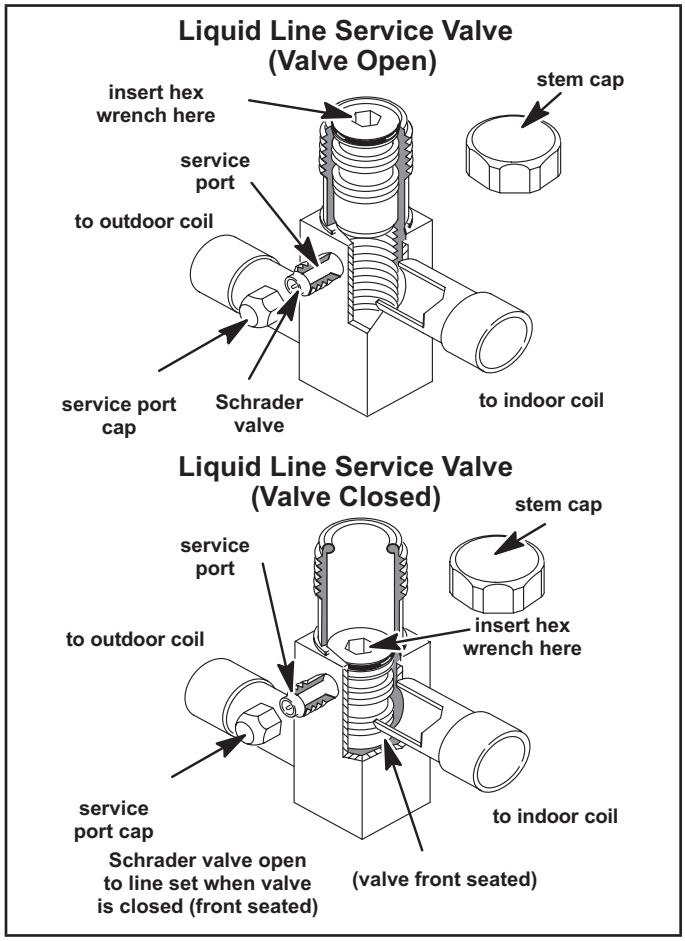


FIGURE 8

To Close Liquid Line Service Valve:

1 - Remove stem cap with an adjustable wrench.

2 - Using service wrench and 5/16" hex head extension if needed (part #49A71), turn stem clockwise to seat the valve. Tighten firmly.

3 - Replace stem cap. Tighten finger tight, then tighten an additional 1/6 turn. Do not over torque.

Opening the Suction Line Service Valve

1 - Remove the stem cap with an adjustable wrench.

2 - Using a service wrench, turn the stem counterclockwise for 1/4 of a turn.

3 - Replace the stem cap and tighten it firmly.

Closing the Suction Line Service Valve

1 - Remove the stem cap with an adjustable wrench.

2 - Using a service wrench, turn the stem clockwise for 1/4 of a turn.

3 - Replace the stem cap and tighten firmly.

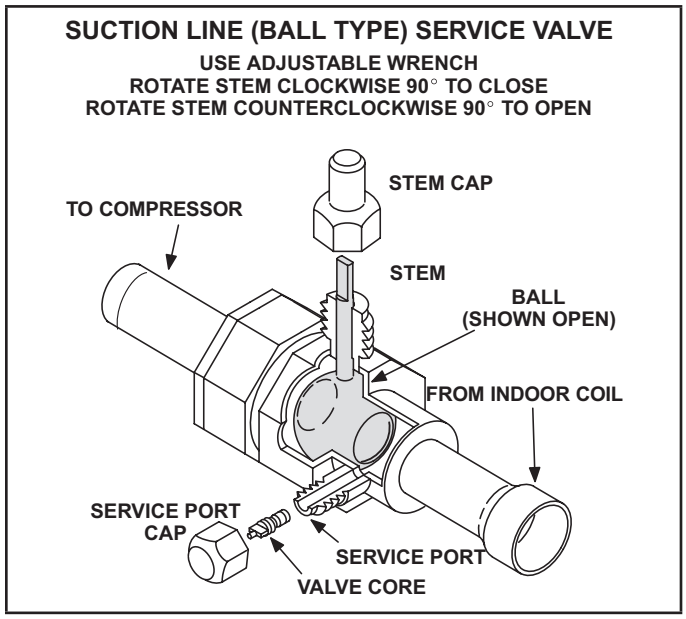


FIGURE 7

III-START-UP

Use the following procedure prior to starting up the unit for the first time.

1 - Rotate fan to check for binding.

2 - Inspect all factory- and field-installed wiring for loose connections.

3 - Open the liquid line and suction line service valves to release the refrigerant charge (contained in outdoor unit) into the system.

4 - Replace the stem caps and secure finger tight, then tighten an additional one-sixth (1/6) of a turn as illustrated in FIGURE 5.

5 - Check voltage supply at the disconnect switch. The voltage must be within the range listed on the unit's nameplate. If not, do not start the equipment until you have consulted the power company and the voltage condition has been corrected.

⚠ IMPORTANT

If unit is equipped with a crankcase heater and the outdoor ambient air is 50ºF (10ºC) or below, it should be energized 24 hours before unit start-up to prevent compressor damage as a result of slugging.

13 - Set the thermostat for a cooling demand. Turn on power to the indoor blower and close the outdoor unit disconnect switch to start the unit.

14 - Recheck voltage while the unit is running. Power must be within range shown on the nameplate.

15 - Check system for sufficient refrigerant using the procedures outlined Section IV- subsection C-.

IV-CHARGING

⚠ CAUTION

ANY NITROGEN CYLINDER CONNECTED TO SYSTEM MUST HAVE A 150 PSIG MAXIMUM SETTING REGULATOR. NEVER INTRODUCE PRESSURES GREATER THAN 150 PSIG TO ANY REFRIGERANT SYSTEM.

A-Leak Testing

⚠ IMPORTANT

Leak detector must be capable of sensing HFC refrigerant.

⚠ WARNING

Refrigerant can be harmful if it is inhaled. Refrigerant must be used and recovered responsibly.

Failure to follow this warning may result in personal injury or death.

⚠ WARNING

Fire, Explosion and Personal Safety hazard. Failure to follow this warning could result in damage, personal injury or death.

Never use oxygen to pressurize or purge refrigeration lines. Oxygen, when exposed to a spark or open flame, can cause fire and/or an explosion, that could result in property damage, personal injury or death.

1 - Connect an R-454B manifold gauge set as illustrated in FIGURE 9.

2 - Open the valve on the R-454B cylinder (suction only).

3 - Open the high pressure side of the manifold to allow R-454B into the line set and indoor unit. Weigh in a trace amount of R-454B. *[A trace amount is a maximum of two ounces (57 g) refrigerant or three pounds (31 kPa) pressure].*

4 - Close the valve on the R-454B cylinder and the valve on the high pressure side of the manifold gauge set.

5 - Disconnect the R-454B cylinder.

6 - Connect a cylinder of dry nitrogen with a pressure regulating valve to the center port of the manifold gauge set.

7 - Adjust dry nitrogen pressure to 150 psig (1034 kPa). Open the valve on the high side of the manifold gauge set in order to pressurize the line set and the indoor unit.

8 - After a few minutes, open one of the service valve ports and verify that the refrigerant added to the system earlier is measurable with a leak detector.

NOTE *- Amounts of refrigerant will vary with line lengths*.

9 - Check all joints for leaks.

10 - Purge dry nitrogen and R-454B mixture.

11 - Correct any leaks and recheck.

12 - After leak testing, disconnect gauges from service ports.

A Connect an R-454B manifold gauge set high pressure hose to the suction valve service port.

B With both manifold valves closed, connect the cylinder of R-454B refrigerant to the center port of the manifold gauge set.

C After the line set has been connected to both the indoor and outdoor units, check the line set connections and indoor unit for leaks. Use the following procedure to test for leaks:

NOTE - LATER IN THE PROCEDURE, THE R-454B CONTAINER WILL BE REPLACE BY THE NITROGEN CONTAINER.

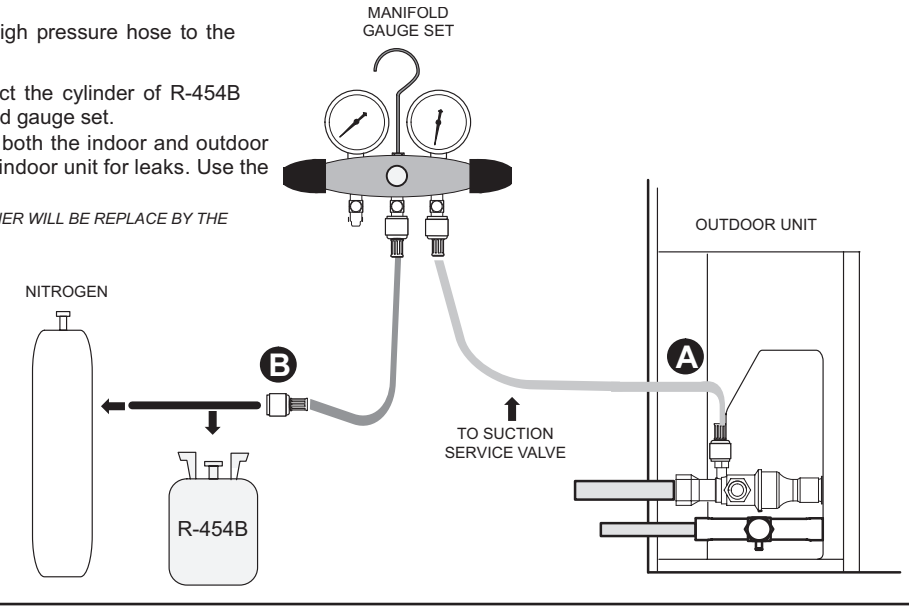


FIGURE 9

B-Evacuating the System

⚠ WARNING

Possible equipment damage. Avoid deep vacuum operation. Do not use compressors to evacuate a system. Extremely low vacuum can cause internal arcing and compressor failure. Damage caused by deep vacuum operation will void warranty.

⚠ IMPORTANT

Use a thermocouple or thermistor electronic vacuum gauge that is calibrated in microns. Use an instrument capable of accurately measuring down to 50 microns.

Evacuating the system of non-condensables is critical for proper operation of the unit. Non-condensables are defined as any gas that will not condense under temperatures and pressures present during operation of an air conditioning system. Non-condensables and water suction combine with refrigerant to produce substances that corrode copper piping and compressor parts.

***NOTE** - Remove cores from service valves if not already done.*

1 - Connect an R-454B manifold gauge set as illustrated in FIGURE 9.

2 - Open both manifold valves and start the vacuum pump.

3 - Evacuate the line set and indoor unit to an **absolute pressure** of 23,000 microns (29 inches of mercury).

NOTE** - During the early stages of evacuation, it is desirable to close the manifold gauge valve at least once to determine if there is a rapid rise in pressure this indicates a relatively large leak. If this occurs, **repeat the leak testing procedure.

***NOTE** - The term **absolute pressure** means the total actual pressure within a given volume or system, above the absolute zero of pressure. Absolute pressure in a vacuum is equal to atmospheric pressure minus vacuum pressure.*

16 - When the absolute pressure reaches 23,000 microns (29 inches of mercury), close the manifold gauge valves, turn off the vacuum pump and disconnect the manifold gauge center port hose from vacuum pump. Attach the manifold center port hose to a dry nitrogen cylinder with pressure regulator set to 150 psig (1034 kPa) and purge the hose. Open the manifold gauge valves to break the vacuum in the line set and indoor unit. Close the manifold gauge valves.

17 - Shut off the dry nitrogen cylinder and remove the manifold gauge hose from the cylinder. Open the manifold gauge valves to release dry nitrogen from the line set and indoor unit.

18 - Reconnect the manifold gauge to vacuum pump, turn pump on, and continue to evacuate line set and indoor unit until the absolute pressure does not rise above 500 microns within a 20-minute period after shutting off vacuum pump and closing the manifold gauge valves.

19 - When the absolute pressure requirement above has been met, disconnect the manifold hose from the vacuum pump and connect it to an upright cylinder of R-454B refrigerant. Open the manifold gauge valve pressure line set to break vacuum with 2 to 5 psi.

20 - Perform the following:

A - Close manifold gauge valves

B - Shut off R-454B cylinder

C - Reinstall service valve cores by removing manifold hose from service valve. Quickly install cores with core tool while maintaining a positive system pressure.

D - Replace the stem caps and secure finger tight, then tighten an additional one-sixth (1/6) of a turn as illustrated in FIGURE 9.

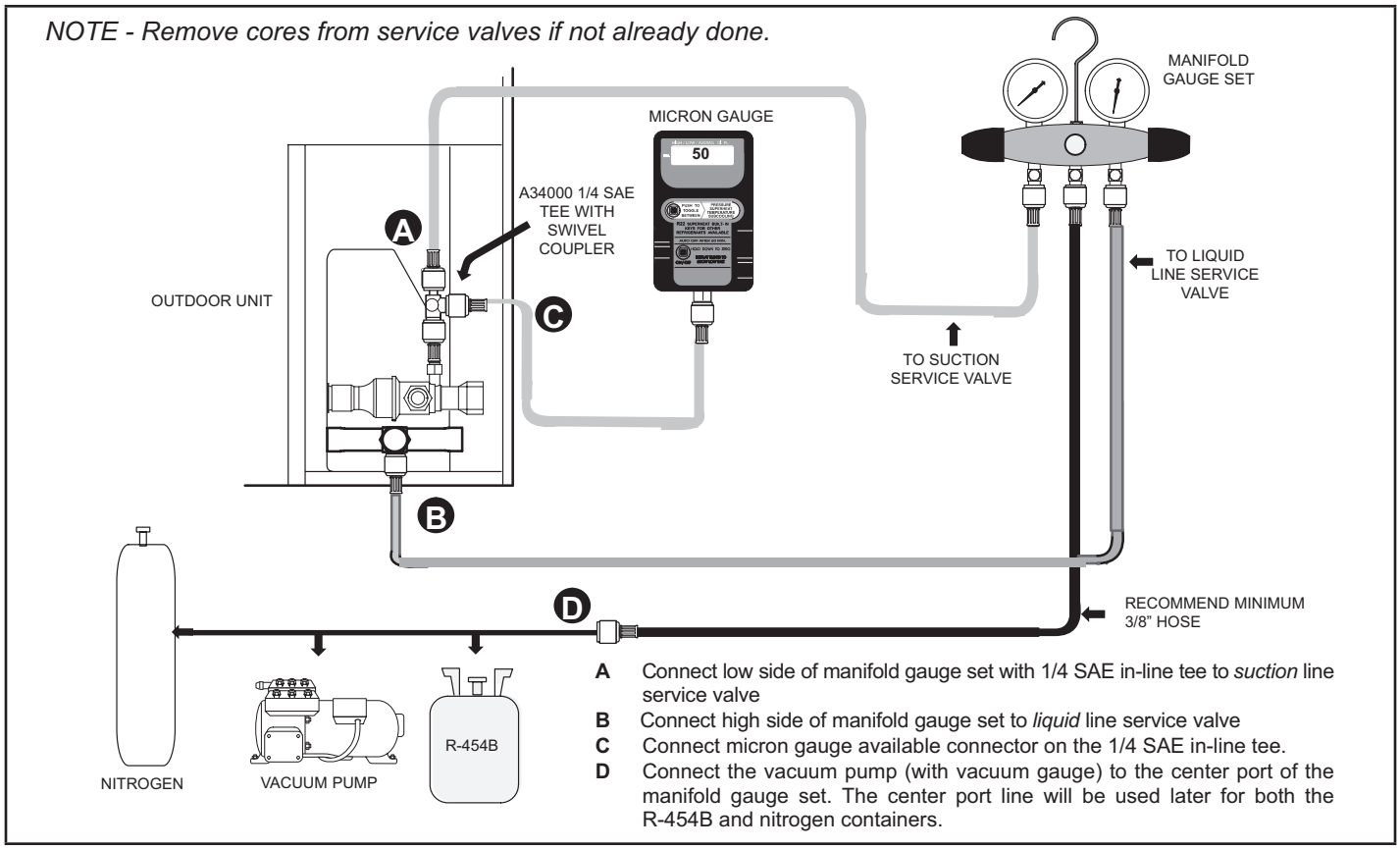


FIGURE 10

C- Refrigerant Charge

The ELKP units have a factory holding charge of 2 pounds of R-454B in each circuit. Additional refrigerant will need to be added during installation. Charge using the R-454B charging information label provided in the unit.

The R-454B charging information label in the unit applies to Indoor and Outdoor unit with same full load capacity, see table below. For all other unit matches, please contact Commercial Application department for Charging Procedure Information (form # 508349-02).

Split System Matches		
Cooling Unit	**Air Handler**	**Air Handler SCFM**
EL072KP	EL090KA	2600
EL090KP	EL090KA	2800
EL120KP	EL120KA	4000

V- SEQUENCE OF OPERATION

COOLING MODE

First Stage Cooling Call

Y1 thermostat demand from Air handler energizes 24VAC signal to TB14-C1 connection.

TB14-C1 voltage energizes CMC1-O terminal. CMC1 defrost board energizes the L1 reversing valve solenoid.

TB14-C1 voltage passes through N.C. K8-2 contacts energizing CMC1-Y1 terminal.

CMC1 energizes the CMC1-Y1 OUT terminal energizing the K1 compressor contactor (assuming S87 low pressure switch and S4 high pressure switch remain closed). Then, energized CMC1-Y1 OUT voltage passes through CMC1 N.C. fan relay energizing K10 fan relay.

K1-1 closes, energizing B1 compressor on low speed.

K1-2 opens to de-energize HR1 crankcase heater.

K10-1 closes, energizing outdoor fan B4 and B5.

***NOTE** – When high voltage power is applied to unit, K1-2 N.C. energizes HR1 crankcase heater.*

Second Stage Cooling Call

Y2 thermostat demand from Air handler energizes 24VAC signal to TB14-C2 connection.

TB14-C2 signal passes though K8-3 N.C. energizing K67 Stage 2 Relay.

K67-1 closes, energizing L34 Solenoid shifting B1 compressor to high speed.

HEATING MODE

Heating Call

W1 thermostat demand from air handler energizes 24VAC signal to TB14-H1 connection.

TB14-H1 signal energizes K8 transfer relay.

K8-2 closes, energizing CMC1-Y1 terminal.

CMC1 energizes the CMC1-Y1 OUT terminal energizing the K1 compressor contactor (assuming S87 low pressure switch and S4 high pressure switch remain closed). Then, energized CMC1-Y1 OUT voltage passes through CMC1 N.C. fan relay energizing K10 fan relay.

K1-1 closes, energizing B1 compressor on low speed.

K1-2 opens to de-energize HR1 crankcase heater.

K10-1 closes, energizing outdoor fan B4 and B5.

K8-3 closes, energizing K67 Stage 2 relay.

K67-1 closes, energizing L34 solenoid shifting B1 compressor to high speed.

***NOTE** – When high voltage power is applied to unit, K1-2 N.C. energizes HR1 crankcase heater.*

DEFROST MODE (occurs during Heating Call)

Defrost Initiation

During heating operation, if outdoor coil temperature falls below S6, S9 (120 only) defrost switch setpoint, the defrost thermostat closes. If defrost thermostat remains closed at the end of 30, 60, or 90 minutes, CMC1 defrost control initiates the defrost sequence.

CMC1 defrost control energizes L1 reversing valve.

CMC1 defrost control energizes CMC1-W1 Output terminal.

CMC-W1 signal passes to TB14-H2 which sends signal back to air handler to call for auxiliary heat as W2.

CMC1 onboard fan relay opens, de-energizing K10 fan relay.

K10-1 contacts open, B4 and B5 outdoor fans are de-energized.

Defrost Termination

Defrost terminates when 14 ± 1 minutes have elapsed or defrost switch opens. When defrost sequence terminates, the defrost timer resets.

CMC1 defrost control deenergizes L1 reversing valve

CMC1 defrost control deenergizes CMC1-W1 output terminal.

CMC1 onboard fan relay closes, energizing K10 fan relay.

K10-1 contacts close, B4 and B5 outdoor fans are energized.

VI- PREVENTATIVE MAINTENANCE / REPAIR

IMPORTANT MAINTENANCE / REPAIR SAFETY INSTRUCTIONS

Prior to beginning work on systems containing FLAMMABLE REFRIGERANTS, safety checks are necessary to ensure that the risk of ignition is minimized.

Work shall be undertaken under a controlled procedure to minimize the risk of a flammable gas or vapor being present while the work is being performed.

All maintenance staff and others working in the local area shall be instructed on the nature of work being carried out. Work in confined spaces shall be avoided.

The area shall be checked with an appropriate refrigerant detector prior to and during work, to ensure the technician is aware of potentially toxic or flammable atmospheres. Ensure that the leak detection equipment being used is suitable for use with all applicable refrigerants, i.e. non-sparking, adequately sealed or intrinsically safe.

If any hot work is to be conducted on the refrigerating equipment or any associated parts, appropriate fire extinguishing equipment shall be available to hand. Have a dry powder or CO2 fire extinguisher adjacent to the charging area.

No person carrying out work in relation to a REFRIGERATING SYSTEM which involves exposing any pipe work shall use any sources of ignition in such a manner that it may lead to the risk of fire or explosion. All possible ignition sources, including cigarette smoking, should be kept sufficiently far away from the site of installation, repairing, removing and disposal, during which refrigerant can possibly be released to the surrounding space. Prior to work taking place, the area around the equipment is to be surveyed to make sure that there are no flammable hazards or ignition risks. “No Smoking” signs shall be displayed.

Where electrical components are being changed, they shall be fit for the purpose and to the correct specification. At all times, the manufacturer’s maintenance and service guidelines shall be followed. If in doubt, consult the manufacturer’s technical department for assistance.

The following checks shall be applied to installations using FLAMMABLE REFRIGERANTS:

– the actual REFRIGERANT CHARGE is in accordance with the room size within which the refrigerant containing parts are installed;

– the ventilation machinery and outlets are operating adequately and are not obstructed;

– if an indirect refrigerating circuit is being used, the secondary circuit shall be checked for the presence of refrigerant;

– marking to the equipment continues to be visible and legible. Markings and signs that are illegible shall be corrected;

– refrigerating pipe or components are installed in a position where they are unlikely to be exposed to any substance which may corrode refrigerant containing components, unless the components are constructed of materials which are inherently resistant to being corroded or are suitably protected against being so corroded.

During repairs to sealed electrical components, the components shall be replaced. Replacement parts shall be in accordance with the manufacturer’s specifications.

During repairs to intrinsically safe components, the components must be replaced. Replace components only with parts specified by the manufacturer. Other parts may result in the ignition of refrigerant in the atmosphere from a leak.

⚠ CAUTION

Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch.

⚠ IMPORTANT

Sprinklers and soaker hoses should not be installed where they could cause prolonged exposure to the outdoor unit by treated water. Prolonged exposure of the unit to treated water (i.e., sprinkler systems, soakers, waste water, etc.) will corrode the surface of the steel and aluminum parts, diminish performance and affect longevity of the unit.

At the beginning of each cooling season, the system should be checked as follows:

OUTDOOR UNIT

1 - Clean and inspect the condenser coil. You can flush the coil with a water hose.

2 - The outdoor fan motor is prelubricated and sealed. No further lubrication is necessary.

3 - Visually inspect connecting lines and coils for evidence of oil leaks.

4 - Check wiring for loose connections.

5 - Check for correct voltage at the unit while the unit is operating and while it is off.

6 - Check amp-draw of the outdoor fan motor(s).
Unit nameplate _____ Actual _____

7 - Check amp-draw of the compressor(s).
Unit nameplate _____
Compressor #1 _____
Compressor #2 _____

***NOTE** – If the owner complains of insufficient cooling, gauge the unit and check the refrigerant charge. Refer to section on refrigerant charging in this instruction.*

VII- DECOMMISSIONING

Before carrying out this procedure, it is essential that the technician is completely familiar with the equipment and all its detail. It is recommended good practice that all refrigerants are recovered safely.

Prior to the task being carried out, an oil and refrigerant sample shall be taken in case analysis is required prior to re-use of recovered refrigerant. It is essential that electrical power is available before starting decommissioning.

a) Become familiar with the equipment and its operation.

b) Isolate system electrically.

c) Before attempting the procedure, ensure that:

- mechanical handling equipment is available, if required, for handling refrigerant cylinders;
- all personal protective equipment is available and being used correctly;
- the recovery process is supervised at all times by a competent person;
- recovery equipment and cylinders conform to the appropriate standards.

d) Pump down refrigerant system, if possible.

e) If a vacuum is not possible, make a manifold so that refrigerant can be removed from various parts of the system.

f) Make sure that cylinder is situated on the scales before recovery takes place.

g) Start the recovery machine and operate in accordance with instructions.

h) Do not overfill cylinders (no more than 80% volume liquid charge).

i) Do not exceed the maximum working pressure of the cylinder, even temporarily.

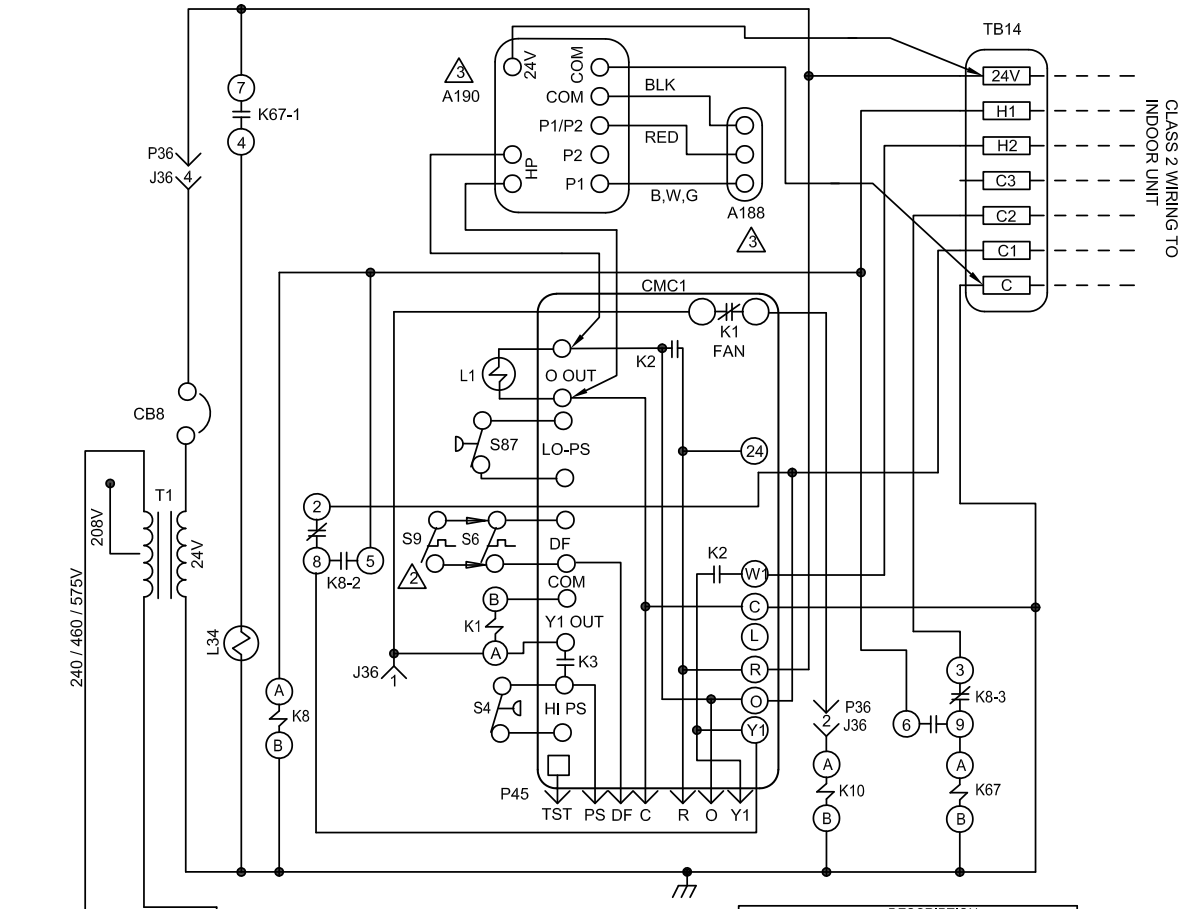
j) When the cylinders have been filled correctly and the process completed, make sure that the cylinders and the equipment are removed from site promptly and all isolation valves on the equipment are closed off.

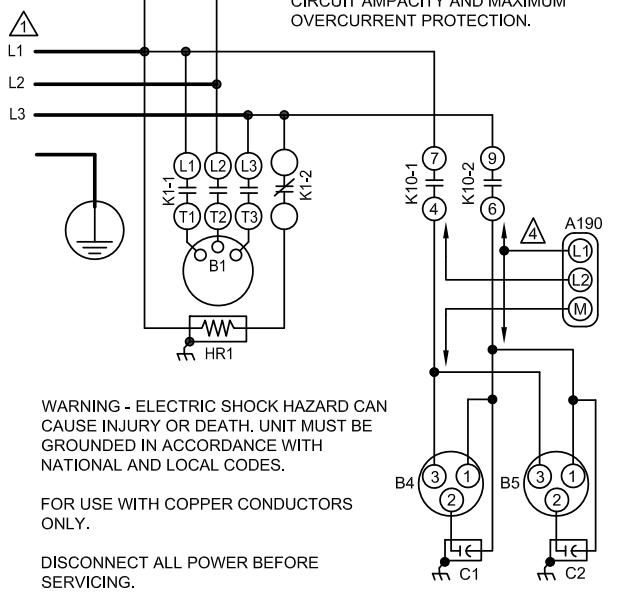
k) Recovered refrigerant shall not be charged into another REFRIGERATING SYSTEM unless it has been cleaned and checked.

⚠ IMPORTANT

Equipment shall be labelled stating that it has been decommissioned and emptied of refrigerant. The label shall be signed and dated. Ensure that there are labels on the equipment that state the flammability of the refrigerant used.

VIII- WIRING DIAGRAM AND SEQUENCE OF OPERATION





1 REFER TO UNIT RATING PLATE FOR MINIMUM CIRCUIT AMPACITY AND MAXIMUM OVERCURRENT PROTECTION.

KEY	DESCRIPTION COMPONENT
A188	TRANSDUCER, COMP 1
A190	CONTROL, HEAD PRESSURE
B1	COMPRESSOR 1
B4	MOTOR-OUTDOOR FAN 1
B5	MOTOR-OUTDOOR FAN 2
C1	CAPACITOR-OUTDOOR FAN 1
C2	CAPACITOR-OUTDOOR FAN 2
CB8	CIRCUIT BREAKER-TRANS T1
CMC1	TIMER-DEFROST,COMPRESSOR 1
HR1	HEATER-COMPRESSOR 1
J36	JACK-TEST, COOL
K1,-1,2	CONTACTOR-COMPRESSOR 1
K8,-2,3	RELAY-TRANSFER
K10,-1,-2	RELAY-OUTDOOR FAN 1
K67,-1	RELAY, STAGE 2 COOL
L1	VALVE-REVERSING
L34	SOLENOID, TWO STAGE
P36	PLUG-TEST, COOL
P45	PLUG-INPUT
S4	SWITCH-LIMIT,HI PRESS COMP 1
S6	SWITCH-DEFROST,COMPRESSOR 1
S9	SWITCH-DEFROST,COMPRESSOR 2
S87	SWITCH-LOW PRESSURE COMP 1
T1	TRANSFORMER-CONTROL
TB14	TERMINAL STRIP-CLASS II VOLTAGE

DENOTES OPTIONAL COMPONENTS
LINE VOLTAGE, FIELD INSTALLED
CLASS II FIELD WIRING

WARNING - ELECTRIC SHOCK HAZARD CAN CAUSE INJURY OR DEATH. UNIT MUST BE GROUNDED IN ACCORDANCE WITH NATIONAL AND LOCAL CODES.

FOR USE WITH COPPER CONDUCTORS ONLY.

DISCONNECT ALL POWER BEFORE SERVICING.

IF ANY WIRE IN THIS APPLIANCE IS REPLACED, IT MUST BE REPLACED WITH WIRE OF LIKE SIZE RATING, INSULATION THICKNESS AND TERMINATIONS.

2 S9 IS USED ON ELITE 120 MODEL ONLY

3 OPTIONAL LOW AMBIENT FIELD KIT (A188, A189, A190, A191) WIRING.

4 OPTIONAL LOW AMBIENT FIELD KIT (A190, A191) WIRING.

2024/11	WIRING DIAGRAM 538297-02	11/24
DUAL SPEED COMPRESSOR		
ELITE HEAT PUMPS - 072,090,120-G,J,Y		
SECTION A 5		REV. 0
Supersedes 538297-01	New Form No. 538297-02	