

HS32 SERIES UNITS

The HS32 is a high efficiency residential split-system condensing unit, which features a scroll compressor and R410A refrigerant. HS32 units are available in sizes ranging from 2 through 5 tons. The series is designed for use with an expansion valve only (approved for use with R410A) in the indoor unit. This manual is divided into sections which discuss the major components, refrigerant system, charging procedure, maintenance and operation sequence.

Information contained in this manual is intended for use by qualified service technicians only. All specifications are subject to change.



⚠ IMPORTANT

Operating pressures of this R410A unit are higher than pressures in R22 units. Always use service equipment rated for R410A.

⚠ 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 qualified installer or service agency.

⚠ WARNING

R410A refrigerant can be harmful if it is inhaled. R410A refrigerant must be used and recovered responsibly.

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

⚠ WARNING



Electric shock hazard. Can cause injury or death. Before attempting to perform any service or maintenance, turn the electrical power to unit OFF at disconnect switch(es). Unit may have multiple power supplies.

ELECTRICAL DATA

Model No.	HS32-024	HS32-030	HS32-036	HS32-042	HS32-048	HS32-060	
Line voltage data - 60hz - 1 phase	208/230v						
Rec. Max fuse/circuit breaker size (amps)	30		35	40	45	60	
ⓘ Minimum circuit ampacity	17.9	19.6	20.4	25.3	27.5	36.2	
Compressor	Rated load amps	13.5	14.8	15.4	19.3	20.6	27.6
	Locked rotor amps	61	73	83	104	109	158
	Power factor	0.98		0.95	0.97	0.97	0.98
Condenser Coil Fan Motor	Full load amps	1.1				1.7	
	Locked rotor amps	2				3.1	

ⓘ Refer to National or Canadian Electrical Code manual to determine wire, fuse and disconnect size requirements.
NOTE — Extremes of operating range are plus 10% and minus 5% of line voltage.

SPECIFICATIONS

Model No.		HS32-024	HS32-030	HS32-036	HS32-042	HS32-048	HS32-060	
Nominal Tonnage (kW)		2 (7.0)	2.5 (8.8)	3 (10.6)	3.5 (12.3)	4 (14.1)	5 (17.6)	
Liquid line - o.d. connection (sweat) - in. (mm)		3/8 (9.5)						
Suction line - o.d. connections (sweat) - in. (mm)		3/4 (19.1)			7/8 (22.2)		1-1/8 (28.6)	
☐ Refrigerant charge furnished (R-410A) - lbs. (kg)		5.44 (2.47)	6.0 (2.72)	7.88 (3.57)	8.19(3.71)		11.31 (5.13)	
Condenser Coil	Net face area - sq. ft. (m2)	Outer coil	11.9 (1.11)	16 (1.49)		18.3 (1.70)	21.8 (2.03)	
		Inner coil	5.5 (0.51)	5.6 (0.52)	13.3 (1.24)		21.1 (1.96)	
	Tube diameter - in. (mm)		5/16 (7.9)					
	No. of rows		1.46	1.35	1.83	1.73	2	
	Fins per inch (m)		22 (866)					
Condenser Fan	Diameter - in. (mm)		20 (508)	24 (610)				
	No. of blades		4	3		4		
	Motor hp (W)		1/6 (124)			1/4 (187)		
	Cfm (L/s)		2450 (1115)	3150 (1485)		3900 (1840)	4200 (1980)	
	Rpm		825			820		
	Watts		210	225		310	350	
Shipping weight - lbs. (kg) 1 package		187 (85)	222 (101)	238 (108)		258 (117)	312 (142)	
OPTIONAL ACCESSORIES - MUST BE ORDERED EXTRA								
Mounting Base		MB2-L (69J07)						

☐ Refrigerant charge sufficient for 20 ft. (6.0 m) length of refrigerant lines.

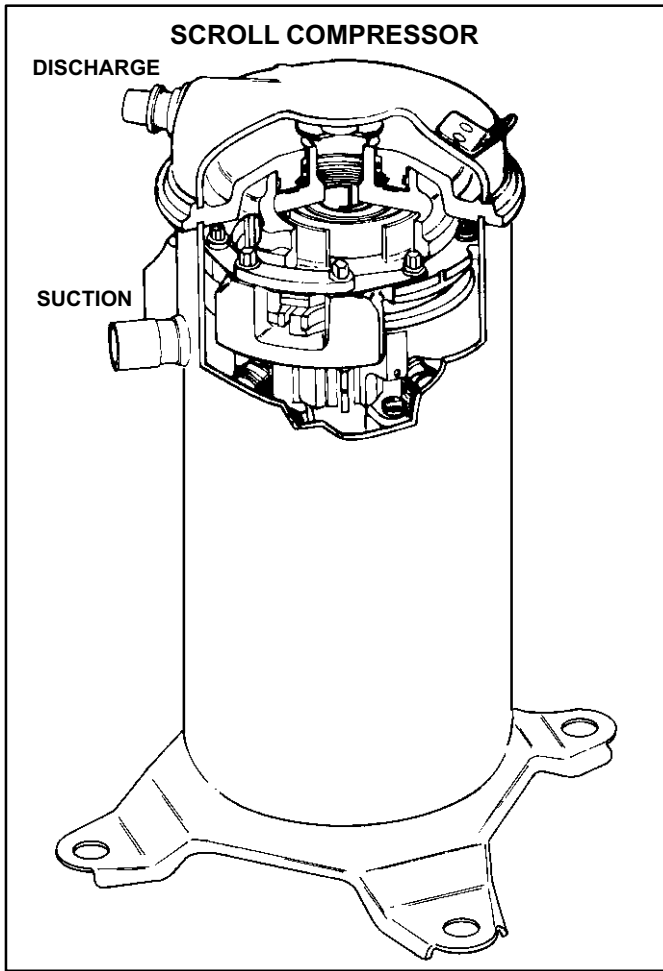


FIGURE 1

I-APPLICATION

All major components (indoor blower and coil) must be matched according to Lennox recommendations for the compressor to be covered under warranty. Refer to the Engineering Handbook for approved system matchups. A misapplied system will cause erratic operation and can result in early compressor failure.

II-SCROLL COMPRESSOR

The scroll compressor design is simple, efficient and requires few moving parts. A cutaway diagram of the scroll compressor is shown in figure 1. The scrolls are located in the top of the compressor can and the motor is located just below. The oil level is immediately below the motor.

The scroll is a simple compression concept centered around the unique spiral shape of the scroll and its inherent properties. Figure 2 shows the basic scroll form. Two identical scrolls are mated together forming concentric spiral shapes (figure 3). One scroll remains stationary, while the other is allowed to "orbit" (figure 4). Note that the orbiting scroll does not rotate or turn but merely "orbits" the stationary scroll.

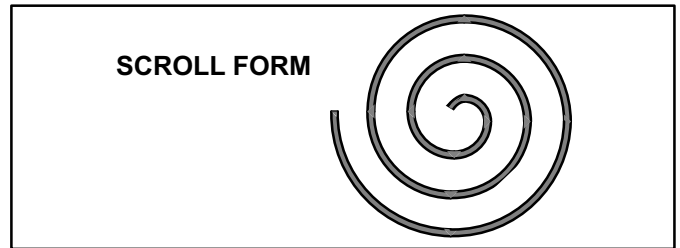


FIGURE 2

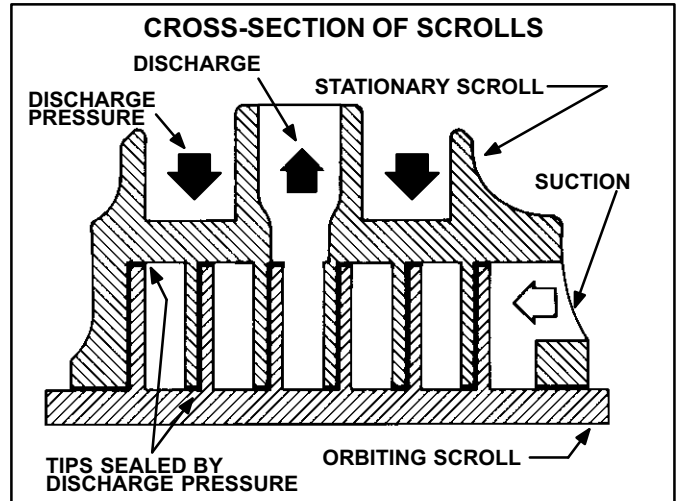


FIGURE 3

The counterclockwise orbiting scroll draws gas into the outer crescent shaped gas pocket created by the two scrolls (figure 4 - 1). The centrifugal action of the orbiting scroll seals off the flanks of the scrolls (figure 4 - 2). As the orbiting motion continues, the gas is forced toward the center of the scroll and the gas pocket becomes compressed (figure 4 - 3). When the compressed gas reaches the center, it is discharged vertically into a chamber and discharge port in the top of the compressor (figure 1). The discharge pressure forcing down on the top scroll helps seal off the upper and lower edges (tips) of the scrolls (figure 3). During a single orbit, several pockets of gas are compressed simultaneously providing smooth continuous compression.

The scroll compressor is tolerant to the effects of liquid return. If liquid enters the scrolls, the orbiting scroll is allowed to separate from the stationary scroll. The liquid is worked toward the center of the scroll and is discharged. If the compressor is replaced, conventional Lennox cleanup practices must be used.

Due to its efficiency, the scroll compressor is capable of drawing a much deeper vacuum than reciprocating compressors. Deep vacuum operation can cause internal fuse arcing resulting in damaged internal parts and will result in compressor failure. Never use a scroll compressor for evacuating or "pumping-down" the system. This type of damage can be detected and will result in denial of warranty claims.

NOTE - During operation, the head of a scroll compressor may be hot since it is in constant contact with discharge gas.

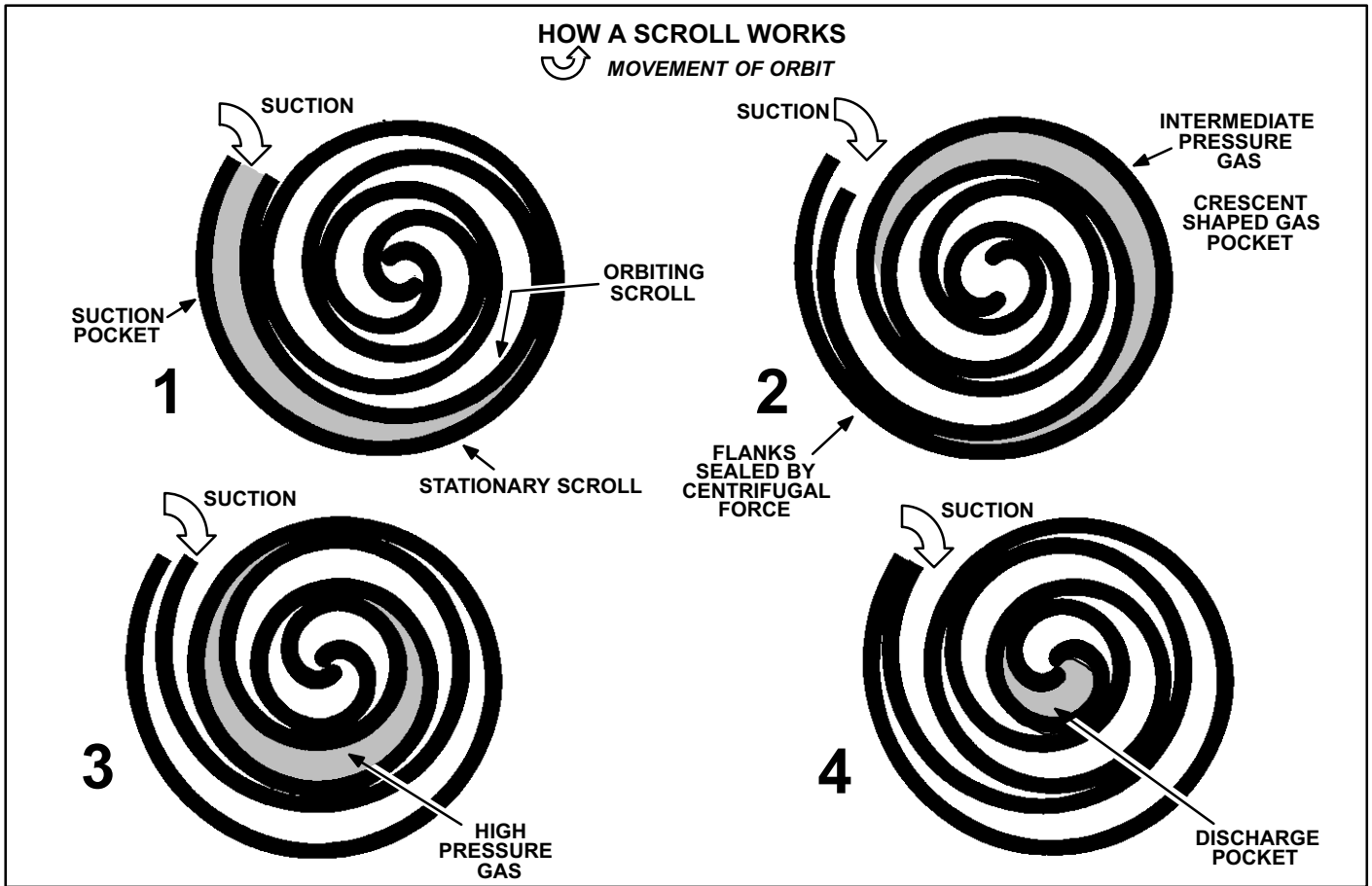


FIGURE 4

III-UNIT COMPONENTS

A-Transformer

The contactor coil, time delay and temperature sensor are all energized by 24VAC supplied by the indoor unit. All other controls in the outdoor unit are powered by line voltage. Refer to unit wiring diagram. The HS32 is not equipped with an internal line voltage to 24V transformer.

B-Contactor


The compressor is energized by a contactor located in the control box. HS32-1 units are single-phase and use two-pole contactors. HS32-2 units are single-phase but use single-pole contactors.

C-Drier

A filter drier designed for all HS32 model units must be installed in the liquid line. Driers installed for units using R22 must be replaced. The factory supplied drier is designed to remove moisture, which can lead to compressor failure. **Any time unit is exposed to open air due to service, drier must be replaced. All replacement driers must be approved for R410A refrigerant.**

ELECTROSTATIC DISCHARGE (ESD)

Precautions and Procedures

⚠ DANGER	
	<p>Shock Hazard All single phase HS32-2 units and later, use single-pole contactors. One leg of compressor, capacitor and condenser fan are connected to line voltage at all times. Potential exists for electrical shock resulting in injury or death. Remove all power at disconnect before servicing. Can cause personal injury or death.</p>

⚠ CAUTION	
<p>Electrostatic discharge can affect electronic components. Take precautions 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. Neutralize electrostatic charge by touching hand and all tools on an unpainted unit surface before performing any service procedure.</p>	

D-TOC Timed Off Control

All HS32 units are equipped with a TOC, (timed off control). The TOC is located in the control box (figure 5). The TOC is electrically connected between thermostat terminal Y and the compressor contactor. When thermostat demand is satisfied, the TOC opens the circuit to the compressor contactor coil and the compressor is de-energized. Between cycles, the compressor contactor is delayed for 5 minutes \pm 2 minutes. At the end of the delay, the compressor is allowed to energize. Without the time delay it would be possible to short cycle the compressor. A scroll compressor, when short cycled, can run backward if head pressure is still high. Scroll compressors running backward can cause nuisance tripping of safety limits. For this reason, if a TOC fails it must be replaced.

E-Compressor

The scroll compressors in all HS32 model units are designed for use with R410A refrigerant and operation at high pressures. Compressors are shipped from the factory with 3MA (32MMMA) P.O.E. oil. If oil must be added for service, Copeland has approved Mobil EAL™ Arctic 22CC and ICI EMKARATE™ RL32CF for use with these compressors. Lennox recommends adding 1 oz. of oil per additional 10 ft. for applications with line sets over 50 ft. See electrical section in this manual for compressor specifications.

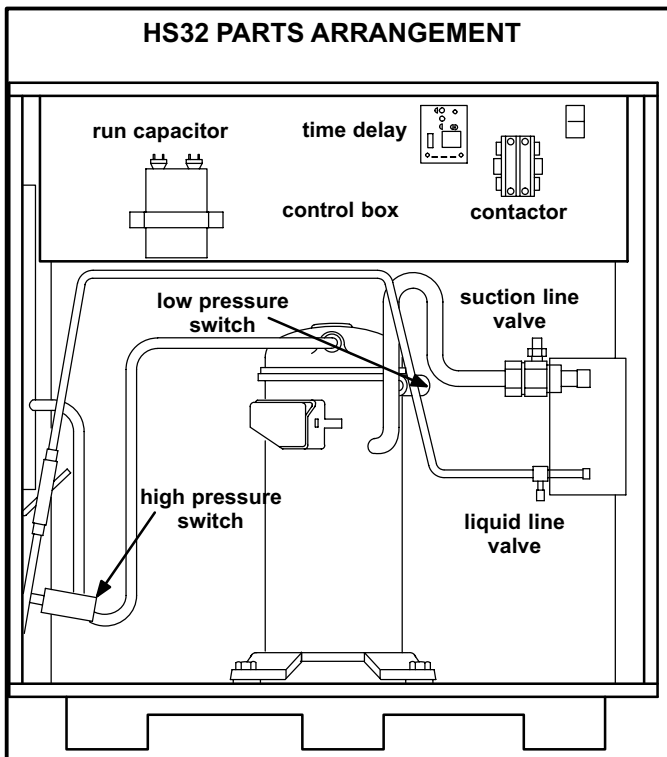


FIGURE 5

F-High/Low Pressure Switch

⚠ IMPORTANT

Pressure switch settings for R410A refrigerant will be significantly higher than units with R22.

A manual-reset, single-pole/single-throw high pressure switch is located in the liquid line. This switch shuts off the compressor when liquid line pressure rises above the factory setting. The switch is normally closed and is permanently adjusted to trip (open) at 640 \pm 10 psi. See figure 5 for switch location.

An auto-reset, single-pole/single-throw low pressure switch is located in the suction line. This switch shuts off the compressor when suction pressure drops below the factory setting. The switch is closed during normal operating pressure conditions and is permanently adjusted to trip (open) at 40 \pm 5 psi. The switch automatically resets when suction line pressure rises above 90 \pm 5 psi. See figure 5 for switch location.

G-Dual Capacitor

The compressor and fan in HS32 single-phase units use permanent split capacitor motors. A single "dual" capacitor is used for both the fan motor and the compressor (see unit wiring diagram). The two sides (fan and compressor) of the capacitor have different mfd ratings and may change with each compressor. The capacitor is located inside the unit control box.

H-Condenser Fan Motor

All units use single-phase PSC fan motors which require a run capacitor. The "FAN" side of the dual capacitor is used for this purpose. The specifications tables on page 1 and 2 of this manual show the specifications of outdoor fans used in HS32 units. In all units, the outdoor fan is controlled by the compressor contactor. See figure 6 if condenser fan motor replacement is necessary.

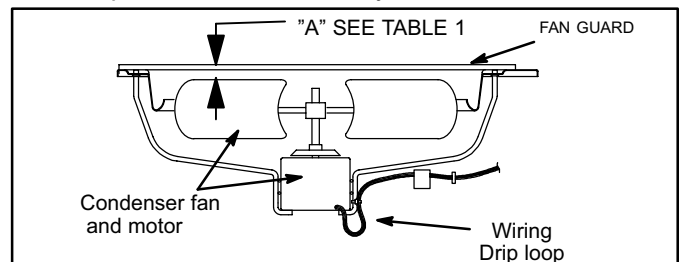


FIGURE 6

TABLE 1

HS32 UNIT	"A" DIM. \pm 1/8"	Fan Blade
-024	7/8"	Lau
		Revcor
-030, -036, -042	1-1/16"	Lau
		Revcor
-048	1-3/4"	Lau
	1-1/2"	Revcor
-060	1-3/16"	Revcor
		Lau

IV-REFRIGERANT SYSTEM

A-Plumbing

Field refrigerant piping consists of liquid and suction lines from the outdoor unit (sweat connections). Use Lennox L15 series line sets as shown in table 2 or field-fabricated refrigerant lines.

Separate discharge and suction service ports are provided at the compressor for connection of gauge manifold during charging procedure.

TABLE 2

HS32 UNIT	LIQUID LINE	SUCTION LINE	L15 LINE SET
-024 -030 -036	3/8 in. (10 mm)	3/4 in. (19 mm)	L15-41 20 ft. - 50 ft. (6m - 15m)
-042 -048	3/8 in. (10 mm)	7/8 in. (22 m)	L15-65 30 ft. - 50 ft. (9 m - 15m)
-060	3/8 in. (10 mm)	1-1/8 in. (29 m)	Field Fabricated

B-Service Valves

The liquid line and suction line service valves and gauge ports are accessible by removing the compressor access cover. Full service liquid and suction line valves are used. See figures 7 and 8. The service ports are used for leak testing, evacuating, charging and checking charge. Service valves have a factory-installed schrader valve. A service port cap is supplied to protect the schrader valve from contamination and assure a leak free seal. Valves are not rebuildable. If a valve has failed it must be replaced. The pressure tap fitting has a LIGHT MAROON tag to remind service technicians that the unit contains R410A.

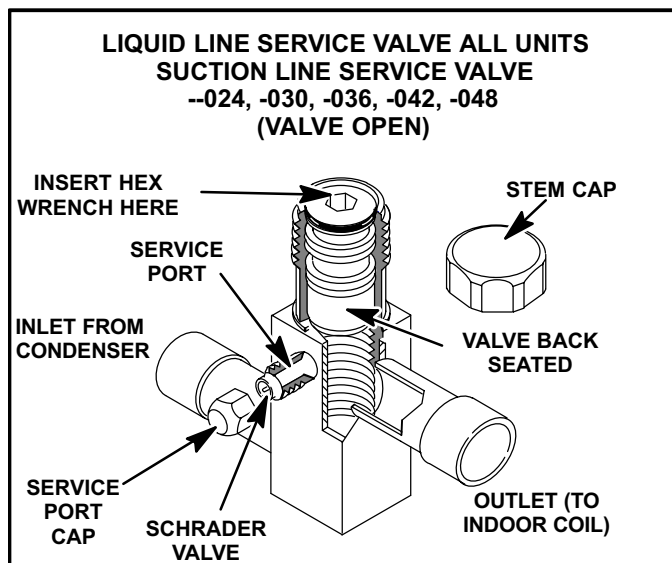


FIGURE 7

To Access Schrader Port:

- 1- Remove service port cap with an adjustable wrench.
- 2- Connect gauge to the service port.
- 3- When testing is completed, replace service port cap. Tighten finger tight, then an additional 1/6 turn.

To Open Liquid or Suction Line Service Valve:

- 1- Remove stem cap with an adjustable wrench.
- 2- Using service wrench and hex head extension (5/16" for suction line and 3/16" for liquid line) back the stem out counterclockwise until the valve stem just touches the retaining ring.
- 3- Replace stem cap and tighten finger tight, then tighten an additional 1/6 turn.

⚠ DANGER

Do not over backseat this valve (figure 7). Attempts to over backseat this valve will cause snap ring to explode from valve body under pressure of refrigerant. Personal injury and unit damage will result.

To Close Liquid or Suction Line Service Valve:

- 1- Remove stem cap with an adjustable wrench.
- 2- Using service wrench and hex head extension, (5/16" for suction line and 3/16" for liquid line) turn stem clockwise to seat the valve. Tighten firmly, but do not overtighten.
- 3- Replace stem cap. Tighten finger tight, then tighten an additional 1/6 turn.

SUCTION LINE (BALL TYPE) SERVICE VALVE HS32-060 MODEL ONLY (VALVE OPEN)

USE ADJUSTABLE WRENCH
ROTATE STEM CLOCKWISE 90° TO CLOSE
ROTATE STEM COUNTER-CLOCKWISE 90° TO OPEN

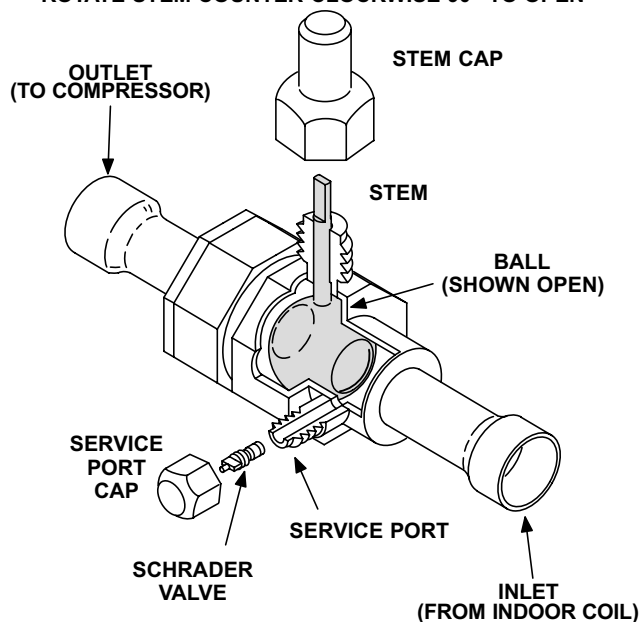


FIGURE 8

V-CHARGING

Units are factory charged with the amount of R410A refrigerant indicated on the unit rating plate. This charge is based on a matching indoor coil and outdoor coil with 20 ft. (6.1m) line set. For varying lengths of line set, refer to table 3 for refrigerant charge adjustment.

TABLE 3

Liquid Line Set Diameter	Ozs. per 5 ft. (grams per 1.5m) adjust from 20 ft. (6.1m) line set*
5/16 in (8mm)	2 ounces per 5 feet (57g per 1.5m)
3/8 in. (10mm)	3 ounces per 5 feet (85g per 1.5m)

*If line length is greater than 20 ft. (6.1m), add this amount. If line length is less than 20 ft. (6.1m), subtract this amount.

A-Leak Testing

After the line set has been connected to the indoor and outdoor units, the line set connections and indoor unit must be checked for leaks.

⚠ WARNING

Never use oxygen to pressurize refrigeration or air conditioning systems. Oxygen will explode on contact with oil and could cause personal injury. When using high pressure gas such as nitrogen for this purpose, be sure to use a regulator that can control the pressure down to 1 or 2 psig (6.9 to 13.8 kPa).

Using an Electronic Leak Detector

- 1 - Connect the high pressure hose of the manifold gauge set to the service port of the vapor valve. (Normally, the high pressure hose is connected to the liquid line port; however, connecting it to the vapor port better protects the manifold gauge set from high pressure damage.)
- 2 - Connect a cylinder of R410A in the UPRIGHT position to the center port of the manifold gauge set.
- 3 - With both manifold valves closed, open the valve on the R410A bottle (vapor only).
- 4 - Open the high pressure side of the manifold to allow R410A into the line set and indoor unit. Weigh in a trace amount of R410A. [A trace amount is a maximum of 2 ounces (57g) refrigerant or 3 pounds (31 kPa) pressure]. Close the valve on the R410A bottle and the valve on the high pressure side of the manifold gauge set. Disconnect R410A bottle.
- 5 - Connect a cylinder of nitrogen with a pressure regulator valve to the center port of the manifold gauge set.
- 6 - Adjust nitrogen pressure to 150 psig (1034 kPa). Open the valve on the high side of the manifold gauge set which will pressurize line set and indoor unit.

- 7 - After a short period of time, open a refrigerant port to make sure the refrigerant added is adequate to be detected. (Amounts of refrigerant will vary with line lengths.) Check all joints for leaks. Purge nitrogen and R410A mixture. Correct any leaks and recheck.

⚠ IMPORTANT

Leak detector must be capable of sensing HFC refrigerant.

⚠ WARNING



Danger of Explosion. Can cause injury, death and equipment damage. When using dry nitrogen, use a pressure-reducing regulator, set at 150 psig (1034 kPa) or less to prevent excessive pressure.

B-Evacuating the System

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 vapor combine with refrigerant to produce substances that corrode copper piping and compressor parts.

- 1 - Connect manifold gauge set to the service valve ports as follows: low pressure gauge to suction line service valve; high pressure gauge to liquid line service valve.

IMPORTANT - Compliant scroll compressors (as with any refrigerant compressor) should never be used to evacuate a refrigeration or air conditioning system.

NOTE - A temperature vacuum gauge, mercury vacuum or thermocouple gauge should be used. The usual bourdon tube gauges are inaccurate in the vacuum range.

- 2 - Connect the vacuum pump (with vacuum gauge) to the center port of the manifold gauge set.
- 3 - Open both manifold valves and start vacuum pump.
- 4 - Evacuate the line set and indoor unit to an **absolute pressure** of 23mm of mercury or approximately 1 inch of mercury or 23,000 microns. 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 **absolute pressure**. A rapid rise in pressure indicates a relatively large leak. If this occurs, the leak testing procedure must be repeated.

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.

5 - When the absolute pressure reaches 23mm 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 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.

⚠ WARNING

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

- 6 - Shut off the nitrogen cylinder and remove the manifold gauge hose from the cylinder. Open the manifold gauge valves to release the nitrogen from the line set and indoor unit.
- 7 - Reconnect the manifold gauge to the vacuum pump, turn the pump on and continue to evacuate the line set and indoor unit until the absolute pressure does not rise above .5mm mercury, or .197 inches of mercury within a 20 minute period after shutting off the vacuum pump and closing the manifold gauge valves.
- 8 - Depending on the equipment used to determine the vacuum level, absolute pressure of .5mm of mercury is equal to 500 microns.
- 9 - 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 R410A refrigerant. Open the manifold gauge valves to break the vacuum in the line set and indoor unit. Close manifold gauge valves and shut off R410A cylinder and remove manifold gauge set.

⚠ IMPORTANT

A temperature vacuum gauge, mercury vacuum (U-tube), or thermocouple gauge should be used. The usual Bourdon tube gauges are not accurate enough in the vacuum range.

⚠ IMPORTANT

The compressor should never be used to evacuate a refrigeration or air conditioning system.

C-Charging

⚠ IMPORTANT

Mineral oils are not compatible with R410A. If oil must be added, it must be a polyol ester oil.

The compressor is charged with sufficient polyol ester oil for line set lengths up to 50 ft. If line set lengths longer than 50 ft. will be required, add 1 ounce of oil for every additional 10 ft. of line set. Do not add any more than 7 oz. of oil. Copeland has approved Mobil EAL™ Arctic 22CC and ICI EMKARATE™ RL32CF for use with these compressors when oil must be added in the field. If the system is void of refrigerant, the unit must be returned to the warehouse for exchange. Do not install a unit which has been delivered void of refrigerant.

The following procedure is intended as a general guide and is for use on expansion valve systems only. For best results, indoor temperature should be 70°F (21°C) to 80°F (26°C). Be sure to monitor system pressures while charging. The following procedure applies to units with and without a thermometer well. If unit is not equipped with thermometer well, a digital thermometer is required for checking ambient and liquid line temperatures.

- 1 - Record outdoor ambient temperature.
- 2 - Attach high pressure gauge set and operate unit for several minutes to allow system pressures to stabilize.
- 3 - Compare stabilized pressures with those provided in table 5, Normal Operating Pressures. Minor variations in these pressures may be expected due to differences in installations. Significant differences could mean that the system is not properly charged or that a problem exists with some component in the system. Pressures higher than those listed indicate that the system is overcharged. Pressures lower than those listed indicate that the system is undercharged. A temperature/pressure chart for R410A refrigerant is provided in table 6 for your convenience. Verify adjusted charge using the approach method.
- 4 - Check to make sure thermometer well (if equipped) is filled with mineral oil before checking liquid line temperature.
- 5 - Outdoor temperature should be 60°F (16°C) or above. Place thermometer in well and read liquid line temperature. If unit is not equipped with a thermometer well use a digital thermometer to check liquid line temperature. Verify the unit charge using the approach method. The difference between the ambient and liquid temperatures should match values given in table 4. Refrigerant must be added to lower approach temperature and removed to increase approach temperature. Loss of charge results in low capacity and efficiency.

**TABLE 4
APPROACH TEMPERATURES**

Model Number	Approach Temperature Liquid Line Temp. - Outdoor Ambient °F
HS32-024	8 ± 1
HS32-030	8 ± 1
HS32-036	6 ± 1
HS32-042	9 ± 1
HS32-048	8 ± 1
HS32-060	12 ± 1

NOTE - For best results, the same electronic thermometer should be used to check both outdoor ambient and liquid line temperatures.

6 - If the system is low on charge, R410A refrigerant must be added. Be aware of the R410A refrigerant cylinder. It will be light maroon-colored. Refrigerant should be added through the suction valve in the liquid state. **Some R410A cylinders are equipped with a dip tube which allows you to draw liquid refrigerant from the bottom of the cylinder without turning the cylinder upside-down. The cylinder will be marked if it is equipped with a dip tube.**

⚠ IMPORTANT

REFRIGERANT SHOULD BE ADDED THROUGH THE SUCTION VALVE IN THE LIQUID STATE.

D-Oil Charge

Refer to compressor nameplate.

VI-SERVICE AND RECOVERY

⚠ WARNING

Polyol ester (POE) oils used with R410A refrigerant absorb moisture very quickly. It is very important that the refrigerant system be kept closed as much as possible. DO NOT remove line set caps or service valve stub caps until you are ready to make connections.

⚠ IMPORTANT

USE RECOVERY MACHINE RATED FOR R410A REFRIGERANT.

If the HS32 system must be opened for any kind of service, such as compressor or drier replacement, you must take extra precautions to prevent moisture from entering the system. The following steps will help to minimize the amount of moisture that enters the system during recovery of R410A.

1 - Use a regulator-equipped nitrogen cylinder to break the system vacuum. Do not exceed 5 psi. The dry nitrogen will fill the system, purging any moisture.

- 2 - Remove the faulty component and quickly seal the system (using tape or some other means) to prevent additional moisture from entering the system.
- 3 - Do not remove the tape until you are ready to install new component. Quickly install the replacement component.
- 4 - Evacuate the system to remove any moisture and other non-condensables.

Any time the HS32 sealed system is opened, the drier must be replaced and the system must be evacuated.

Any moisture not absorbed by the polyol ester oil can be removed by triple evacuation. Moisture that has been absorbed by the compressor oil can be removed by replacing the drier.

⚠ IMPORTANT

Evacuation of system only will not remove moisture from oil. Drier must be replaced to eliminate moisture from POE oil.

VII-MAINTENANCE

At the beginning of each heating or cooling season, the system should be cleaned as follows:

A-Outdoor Unit

- 1- Clean and inspect condenser coil. (Coil may be flushed with a water hose).
- 2- Visually inspect all connecting lines, joints and coils for evidence of oil leaks.

⚠ IMPORTANT

If insufficient heating or cooling occurs, the unit should be gauged and the refrigerant charge should be checked.

B-Indoor Coil

- 1- Clean coil if necessary.
- 2- Check connecting lines and coil for oil leaks.
- 3- Check condensate line and clean if necessary.

C-Indoor Unit

- 1- Clean or change filters.
- 2- Adjust blower cooling speed. Check static pressure drop over coil to determine correct blower CFM. Refer to Lennox Engineering Handbook.
- 3- Belt Drive Blowers - Check condition/tension.
- 4- Check all wiring for loose connections.
- 5- Check for correct voltage at unit.
- 6- Check amp-draw on blower motor.
Unit nameplate _____ Actual _____.

**TABLE 5
NORMAL OPERATING PRESSURES
(Liquid ±10 and Suction ±5 psig)**

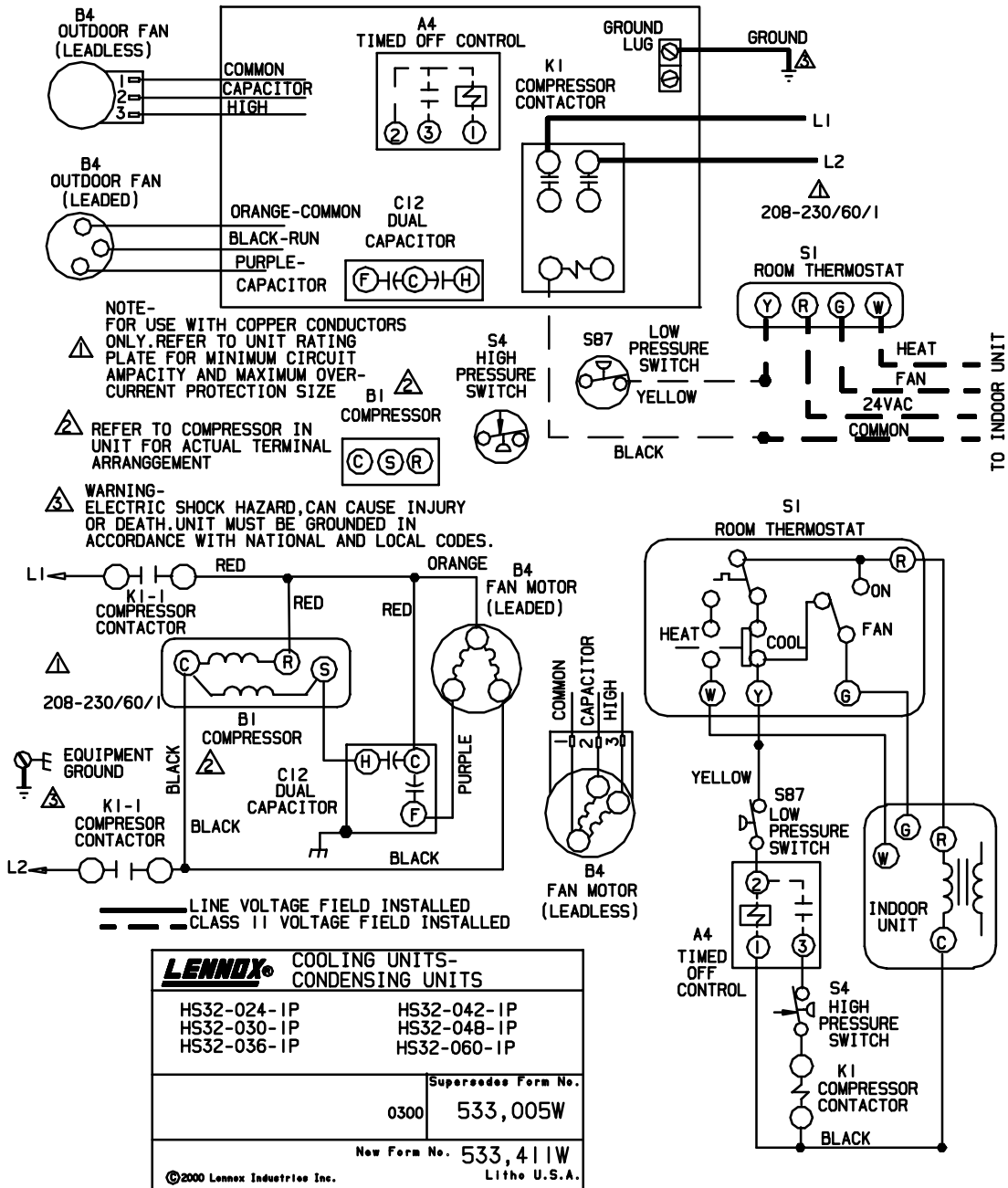
MODE	OUTDOOR COIL EN- TERING AIR TEMP. °F (°C)	HS32-024		HS32-030		HS32-036		HS32-042		HS32-048		HS32-060	
		Liquid	Suction	Liquid	Suction	Liquid	Suction	Liquid	Suction	Liquid	Suction	Liquid	Suction
TXV	65 (18.3)	239	129	232	130	235	128	241	131	226	130	240	130
	75 (23.9)	278	131	271	132	276	130	282	133	266	132	279	132
	85 (29.4)	321	133	314	135	320	132	326	135	310	135	321	135
	95 (35.0)	368	135	360	137	367	134	373	137	356	137	368	137
	105 (40.6)	420	138	412	140	421	137	424	139	407	139	418	140

TABLE 6

Temperature °F (°C)	Pressure Psig	Temperature °F (°C)	Pressure Psig	Temperature °F (°C)	Pressure Psig	Temperature °F (°C)	Pressure Psig
32	100.8	63	178.5	94	290.8	125	445.9
33	102.9	64	181.6	95	295.1	126	451.8
34	105.0	65	184.3	96	299.4	127	457.6
35	107.1	66	187.7	97	303.8	128	463.5
36	109.2	67	190.9	98	308.2	129	469.5
37	111.4	68	194.1	99	312.7	130	475.6
38	113.6	69	197.3	100	317.2	131	481.6
39	115.8	70	200.6	101	321.8	132	487.8
40	118.0	71	203.9	102	326.4	133	494.0
41	120.3	72	207.2	103	331.0	134	500.2
42	122.6	73	210.6	104	335.7	135	506.5
43	125.0	74	214.0	105	340.5	136	512.9
44	127.3	75	217.4	106	345.3	137	519.3
45	129.7	76	220.9	107	350.1	138	525.8
46	132.2	77	224.4	108	355.0	139	532.4
47	134.6	78	228.0	109	360.0	140	539.0
48	137.1	79	231.6	110	365.0	141	545.6
49	139.6	80	235.3	111	370.0	142	552.3
50	142.2	81	239.0	112	375.1	143	559.1
51	144.8	82	242.7	113	380.2	144	565.9
52	147.4	83	246.5	114	385.4	145	572.8
53	150.1	84	250.3	115	390.7	146	579.8
54	152.8	85	254.1	116	396.0	147	586.8
55	155.5	86	258.0	117	401.3	148	593.8
56	158.2	87	262.0	118	406.7	149	601.0
57	161.0	88	266.0	119	412.2	150	608.1
58	163.9	89	270.0	120	417.7	151	615.4
59	166.7	90	274.1	121	423.2	152	622.7
60	169.6	91	278.2	122	428.8	153	630.1
61	172.6	92	282.3	123	434.5	154	637.5
62	195.5	93	286.5	124	440.2	155	645.0

VIII-DIAGRAMS / OPERATING SEQUENCE

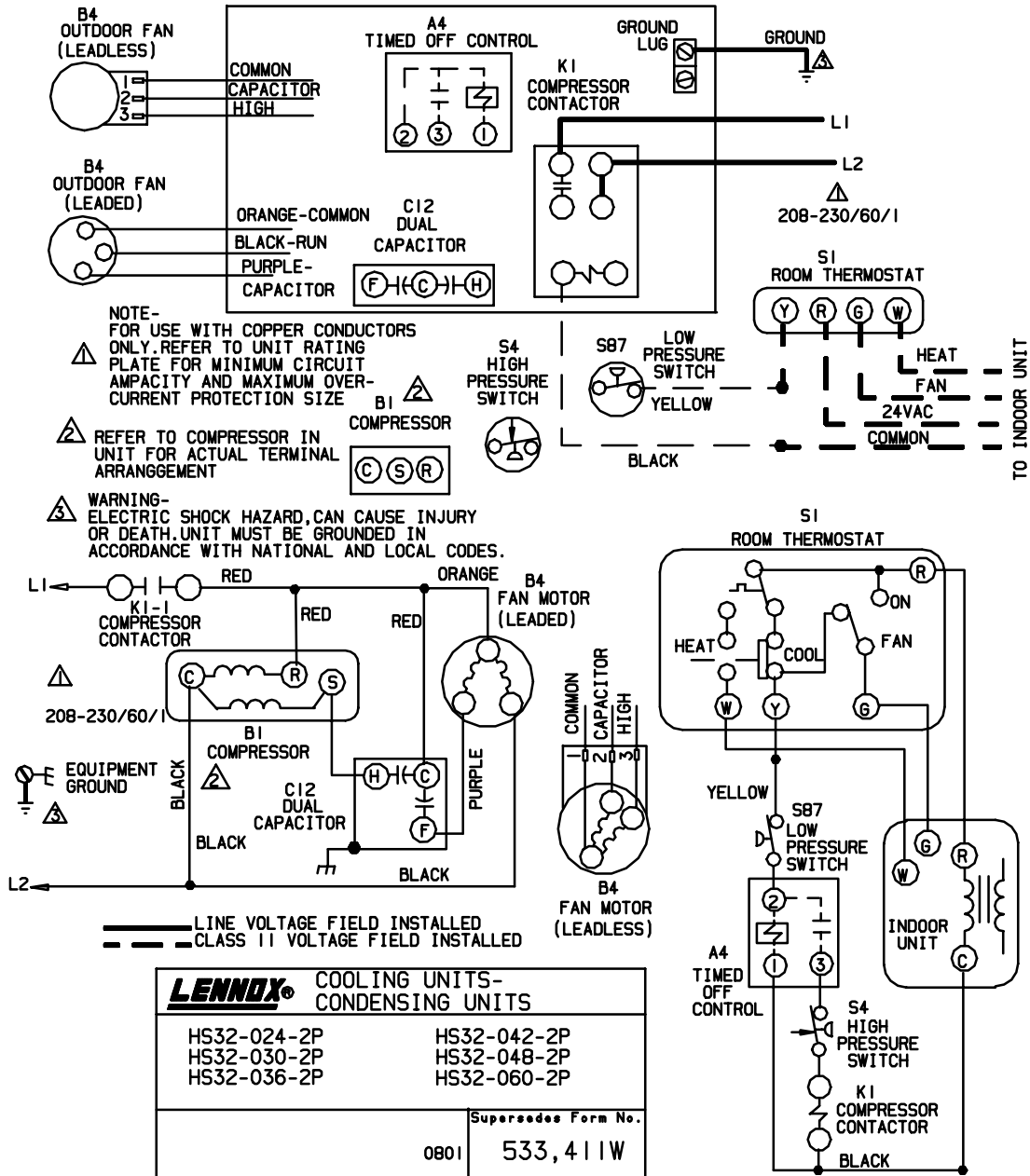
A - Unit Diagram HS32-024/060-1P



Operation Sequence

- 1 - Cooling demand energizes thermostat terminal Y. Voltage from terminal Y passes through the low pressure switch and the timed-off control (TOC) and energizes the K1 compressor contactor coil (provided 5-minute delay is satisfied).
- 2 - K1-1 and K1-2 contacts close energizing B1 compressor and B4 outdoor fan.
- 3 - When cooling demand is satisfied, K1-1 and K1-2 contacts open and de-energize the compressor and outdoor fan. The timed off control begins a 5-minute delay.

B - Unit Diagram HS32-024/060-2P



LENNOX® COOLING UNITS- CONDENSING UNITS	
HS32-024-2P	HS32-042-2P
HS32-030-2P	HS32-048-2P
HS32-036-2P	HS32-060-2P
	Supersedes Form No.
0801	533,411W
	New Form No.
	533,841W

Operation Sequence

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- 1 - Cooling demand energizes thermostat terminal Y. Voltage from terminal Y passes through the low pressure switch and the timed-off control (TOC) and energizes the K1 compressor contactor coil (provided 5-minute delay is satisfied).
- 2 - K1-1 and K1-2 contacts close energizing B1 compressor and B4 outdoor fan.
- 3 - When cooling demand is satisfied, K1 contacts open and de-energizes the compressor and outdoor fan. The timed off control begins a 5-minute delay.