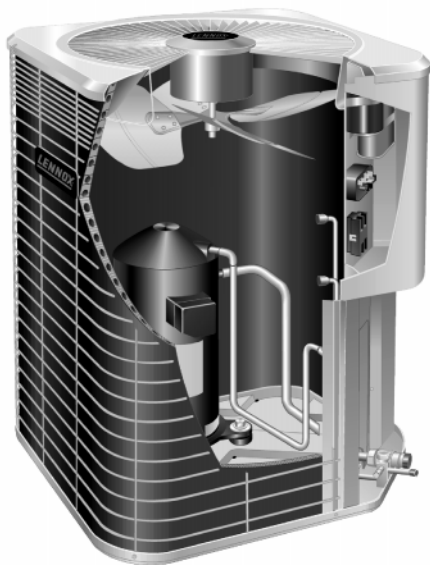




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Dallas, Texas, USA



⚠ 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.

Elite 11™ Condensing Unit

Elite 11 condensing units are designed for expansion valve (TXV) and RFC systems. Refer to Lennox engineering handbook for expansion valve kits which must be ordered separately.

Shipping & Packing List

- 1 - Assembled HS29 condensing unit
- 1 - 45° copper street elbow
- 1 - RFCIV refrigerant metering orifice
- 1 - Coupling, 5/16 x 3/8" (012, 018, 024, 030)

Check equipment for shipping damage. If you find any damage, immediately contact the last carrier.

⚠ IMPORTANT

The Clean Air Act of 1990 bans the intentional venting of refrigerant (CFC's and HCFC's) as of July 1, 1992. Approved methods of recovery, recycling or reclaiming must be followed. Fines and/or incarceration may be levied for non-compliance.

INSTALLATION INSTRUCTIONS

Elite™ Series HS29 Condensing Units

CONDENSING UNITS

1 through 5 ton
504,180M
3/2000
Supersedes 504,087M

TP Technical
Publications
Litho U.S.A.

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RETAIN THESE INSTRUCTIONS FOR FUTURE REFERENCE

General Information

These instructions are intended as a general guide and do not supersede national or local codes in any way. Consult authorities having jurisdiction before installation.

⚠ WARNING

Product contains fiberglass wool.

Disturbing the insulation in this product during installation, maintenance, or repair will expose you to fiberglass wool dust. Breathing this may cause lung cancer. (Fiberglass wool is known to the State of California to cause cancer.)

Fiberglass wool may also cause respiratory, skin, and eye irritation.

To reduce exposure to this substance or for further information, consult material safety data sheets available from address shown below, or contact your supervisor.

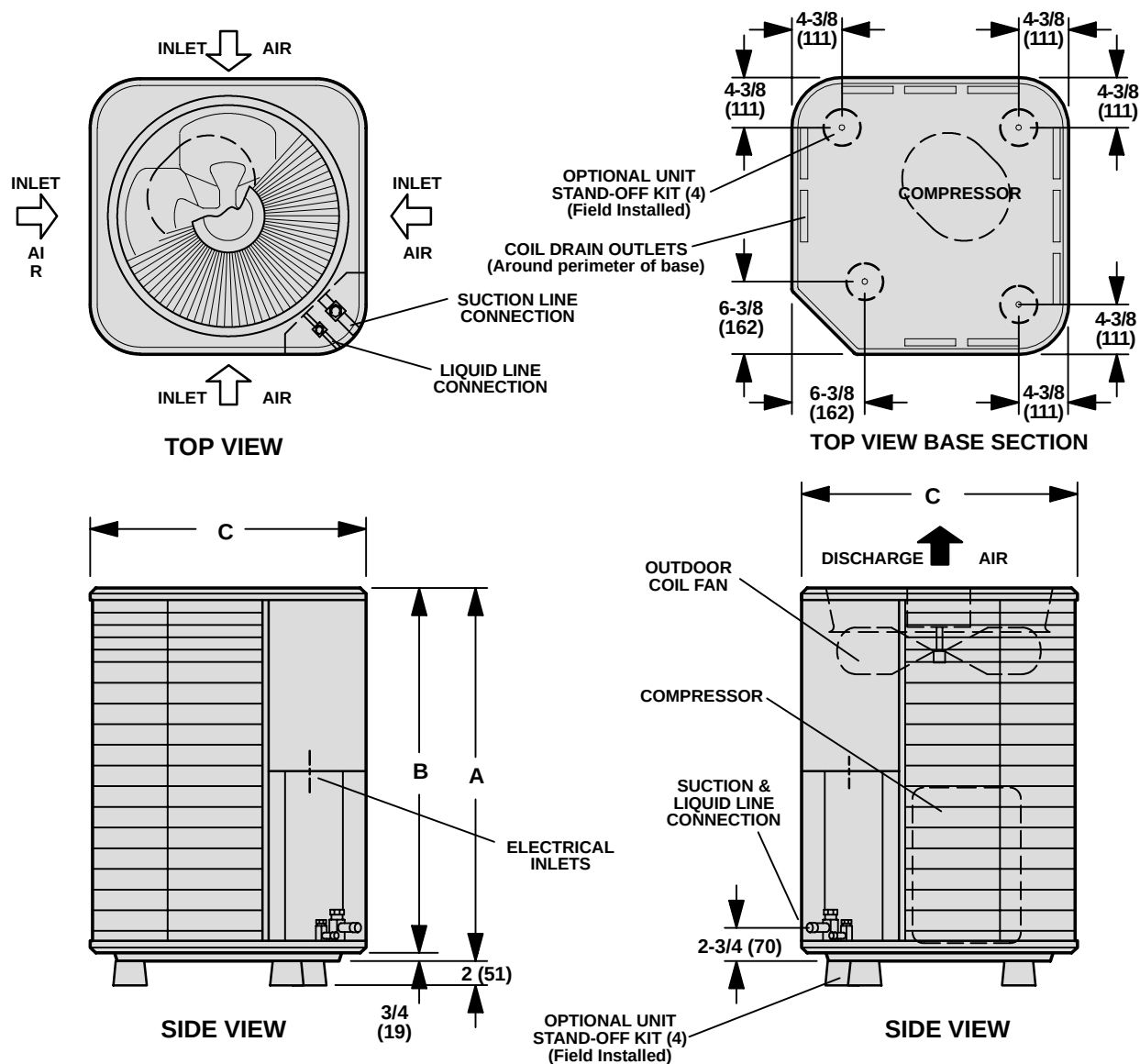
Lennox Industries Inc.

P.O. Box 799900
Dallas, TX 75379-9900

504,180M



HS29 Unit Dimensions - inches (mm)



Model No.		A	B	C
HS29-012 HS29-018 HS29-024	in.	25	24-1/4	24-1/4
	mm	635	616	616
HS29-030	in.	29	28-1/4	24-1/4
	mm	737	718	616
HS29-036 HS29-042 HS29-048 HS29-060 HS29-062	in.	33	32-1/4	24-1/4
	mm	838	819	616
HS29-065	in.	37-1/4	36-1/2	28-1/4
	mm	946	927	718

Setting the Unit

Refer to unit dimensions on page 2 for sizing mounting slab, platforms or supports. Refer to figure 1 for installation clearances.

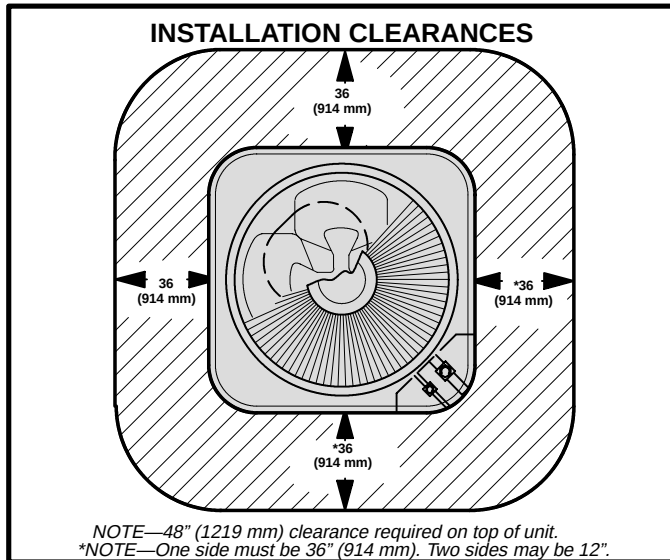


FIGURE 1

Slab Mounting

When installing unit at grade level, install on a level slab high enough above grade to allow adequate drainage of water. Top of slab should be located so run-off water from higher ground will not collect around unit.

Roof Mounting

Install unit at a minimum of 4 inches above the surface of the roof. Care must be taken to ensure weight of unit is

properly distributed over roof joists and rafters. Either red-wood or steel supports are recommended.

Electrical

In the U.S.A., wiring must conform with current local codes and the current National Electric Code (NEC). In Canada, wiring must conform with current local codes and the current Canadian Electrical Code (CEC). Refer to the furnace or blower coil installation instructions for additional wiring application diagrams and refer to unit rating plate for minimum circuit ampacity and maximum overcurrent protection size.

⚠ WARNING

Unit must be grounded in accordance with national and local codes. Electric Shock Hazard. Can cause injury or death.

Line Voltage

To facilitate conduit, a hole is provided in bottom of the control box. Connect conduit to hole in control box with proper conduit fitting.

NOTE - Units are approved for use with copper conductors only.

24V, Class II Circuit

24V, Class II Circuit connections are made up in the low voltage junction box. Refer to figure 2 for field wiring diagram.

NOTE - A complete unit wiring diagram is located inside the unit control box cover.

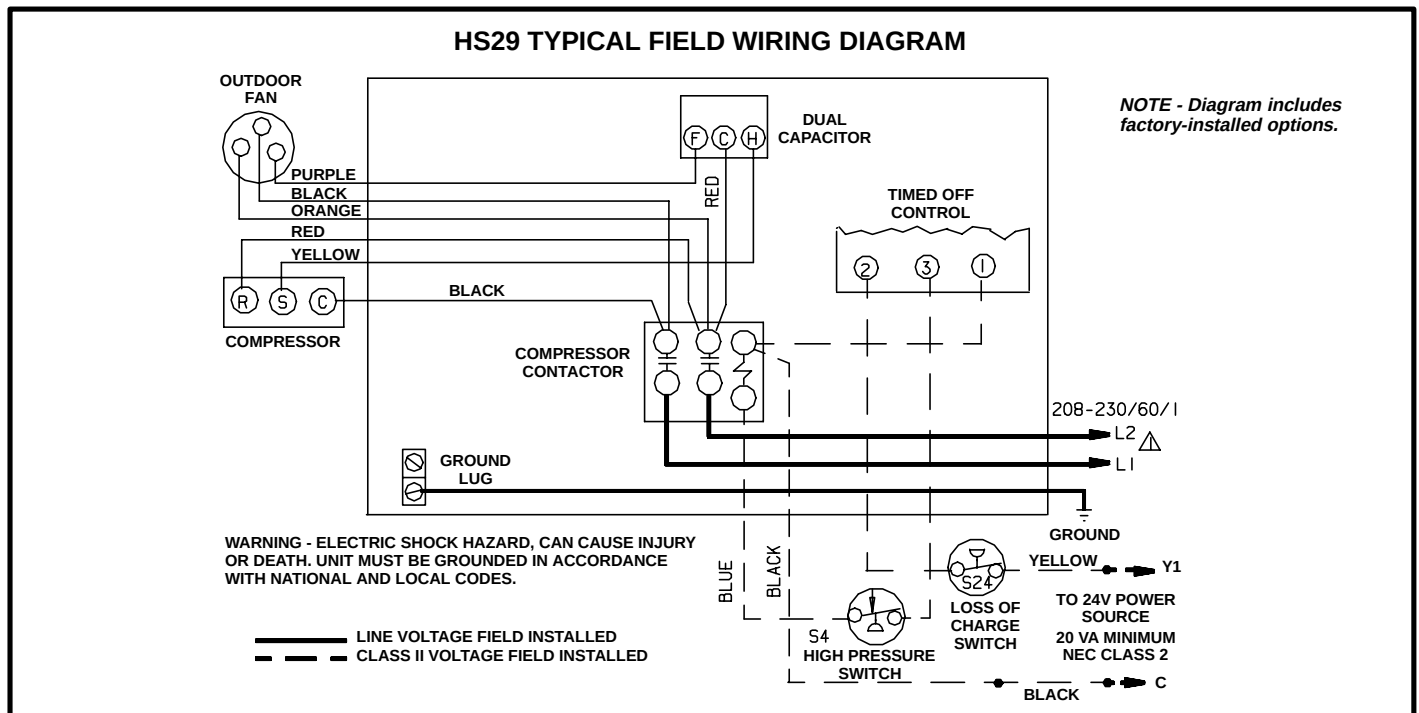


FIGURE 2

Plumbing

Field refrigerant piping consists of liquid and suction lines from the condensing unit (sweat connections) to the indoor evaporator coil (sweat connections). Use Lennox L15 (sweat) series line sets as shown in table 1 or use field-fabricated refrigerant lines. Refer to Refrigerant Piping bulletin in Service Manual for proper size, type and application of field-fabricated lines.

Sweat Connection Procedure

- 1 - Ends of refrigerant lines must be cut square, free from nicks or dents, deburred. Pipe must remain round, do not pinch end of line.
- 2 - Wrap a wet cloth around the liquid line valve body and copper tube stub to protect from heat damage during brazing. Wrap another wet cloth underneath the liquid valve to protect the base paint.
- 3 - Quench the joints with a wet cloth to prevent possible heat damage to the valve core and opening port.
- 4 - A field provided filter drier should be installed as close as possible to the expansion device.

Refrigerant Metering Device

HS29 units are applicable to either RFCIV or an expansion valve system. See indoor coil installation instructions and the Lennox engineering handbook for approved RFC and TXV match-ups and application information. Table 1 lists HS29 unit liquid and suction line sizes and corresponding line sets.

NOTE - In applications requiring line set lengths in excess of 50 feet (15.2 m) contact Lennox Application Engineering Department. Select line set diameters from table 1 to ensure oil return to compressor.

**TABLE 1
REFRIGERANT LINE SETS**

HS29 UNIT	LIQUID LINE	SUCTION LINE	LINE SETS
HS29-012 HS29-018 HS29-024	5/16 in* (8 mm)	5/8 in (16 mm)	L15-21 20 ft. - 50 ft. (6 m - 15 m)
HS29-030	5/16 in* (8 mm)	3/4 in. (19 mm)	L15-31 20 ft. - 50 ft. (6 m - 15 m)
HS29-036	3/8 in (10 mm)	3/4 in. (19 mm)	L15-41 20 ft. - 50 ft. (6 m - 15 m)
HS29-042 HS29-048	3/8 in (10 mm)	7/8 in. (22 mm)	L15-65 30 ft. - 50 ft. (9 m - 15 m)
HS29-060	3/8 in (10 mm)	1-1/8 in. (29 mm)	FIELD FABRICATED

*Use reducer supplied in bag assembly.

RFC Systems

HS29 units are shipped with an RFCIV metering device. Replace existing RFCIV orifice in indoor unit with the orifice

supplied with this unit. Place the supplied RFCIV sticker on indoor unit cabinet after installation. See table 2 for size of RFCIV orifice shipped with each HS29 unit. In non-traditional applications, RFCIV orifice shipped with unit may not be appropriate. Refer to the indoor coil installation instructions and the engineering handbook for specific orifice information.

**TABLE 2
RFCIV ORIFICE DRILL SIZES**

HS29 UNIT	ORIFICE PART #	DRILL SIZE
HS29-012	42J35	0.047
HS29-018	42J39	0.055
HS29-024	66J87	0.062
HS29-030	42J45	0.067
HS29-036	42J48	0.073
HS29-042	42J51	0.078
HS29-048	42J55	0.086
HS29-060	42J61	0.098

RFCIV orifice is installed as shown in figure 3. Do not twist cap tubes when loosening seal nut from orifice body.

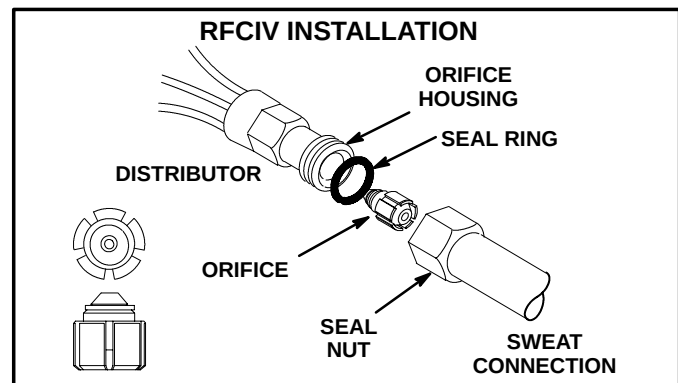


FIGURE 3

Expansion Valve Systems

Expansion valves equipped with "Chatleff" type fittings are available from Lennox. Refer to the indoor coil installation instructions or the engineering handbook for applicable expansion valves for use with specific match-ups.

If an expansion valve application is desired with an indoor coil that is shipped with an RFCIV orifice, the RFCIV orifice must be removed before the expansion valve is installed.

⚠ IMPORTANT

Failure to remove RFCIV orifice when installing an expansion valve to the indoor coil will result in improper operation and damage to the system.

Manifold Gauge Set

A manifold gauge set equipped with “low loss” hoses should be used when checking unit charge. A manifold gauge set with anything other than “low loss” hose should not be used.

Liquid & Suction Line Service Valves

The liquid line and suction line service valves (figures 4 and 5) and gauge ports are accessible from outside the unit. The service ports are used for leak testing, evacuating, charging and checking charge.

The valve is equipped with a service port. A Schrader valve is factory installed. A service port cap is supplied to protect the Schrader valve from contamination and serve as the primary leak seal.

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 - Use a service wrench with a hex-head extension (5/16" for suction line and 3/16" for liquid line) to back the stem out counterclockwise until the valve stem just touches the retaining ring.

⚠ WARNING

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

- 3 - Replace the stem cap. Tighten finger tight, then tighten an additional 1/6 turn.

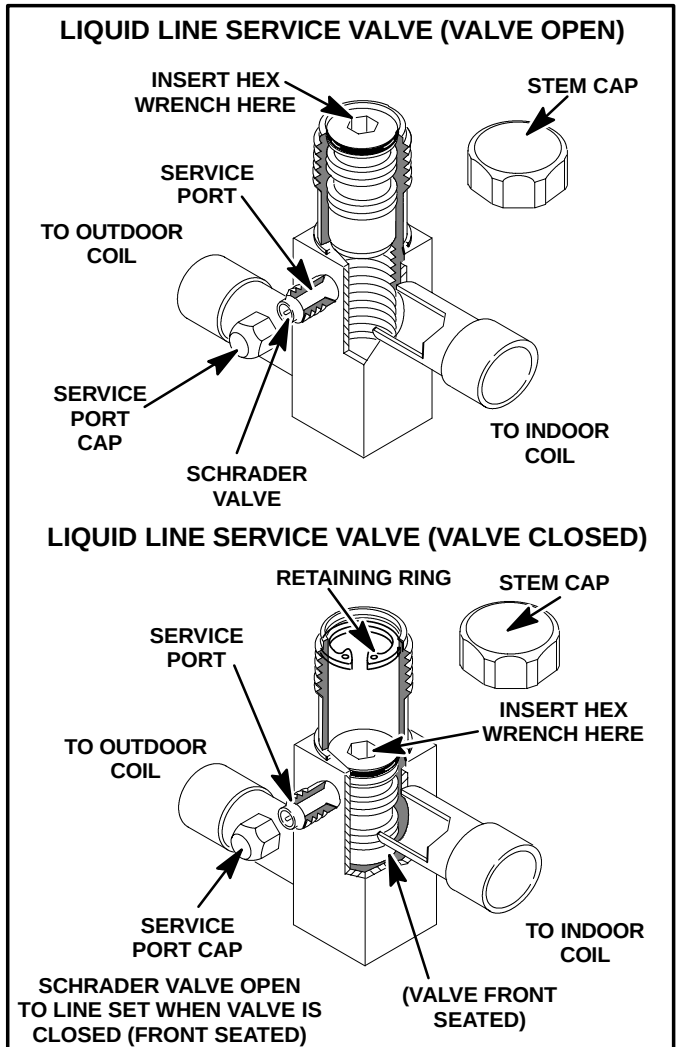


FIGURE 4

To Close Liquid or Suction Line Service Valve:

- 1 - Remove stem cap with an adjustable wrench.
- 2 - Use a service wrench with a hex-head extension (5/16" for suction line and 3/16" for liquid line) to turn stem clockwise to seat the valve. Tighten firmly.
- 3 - Replace stem cap. Tighten finger tight, then tighten an additional 1/6 turn.

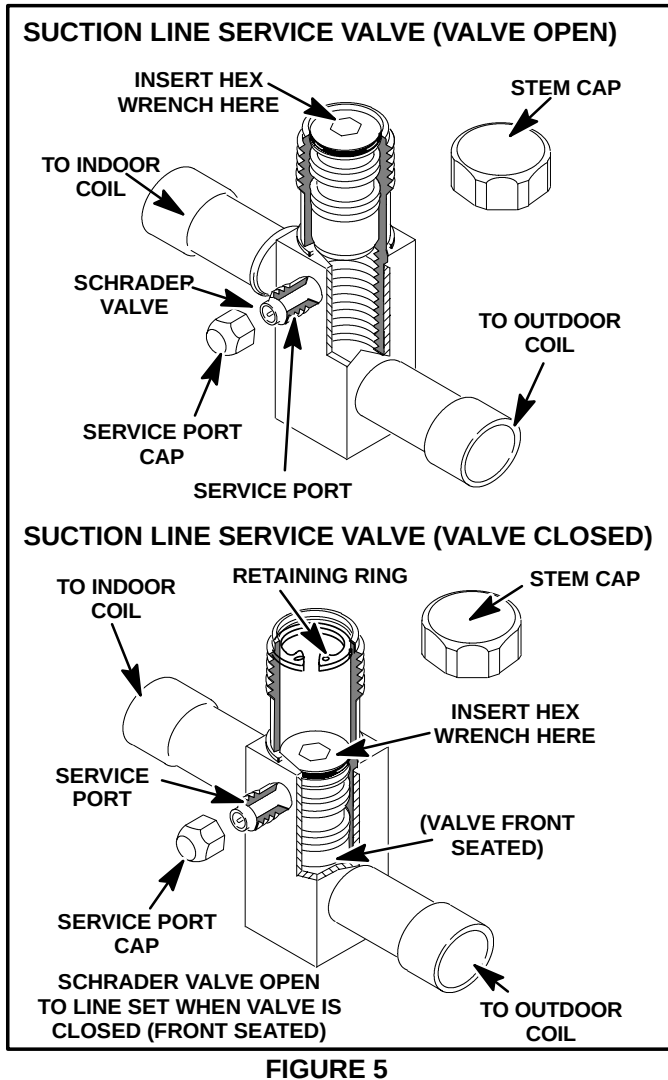


FIGURE 5

5-Ton Suction Line (Ball Type) Service Valve

A ball-type full-service valve is used on five ton HS29-060 units only. These suction line service valves function the same way, differences are in construction. Valves are not rebuildable. If a valve has failed it must be replaced. A ball valve valve is illustrated in figure 6.

The ball valve is equipped with a service port. A Schrader valve is factory installed. A service port cap is supplied to protect the Schrader valve from contamination and assure a leak free seal.

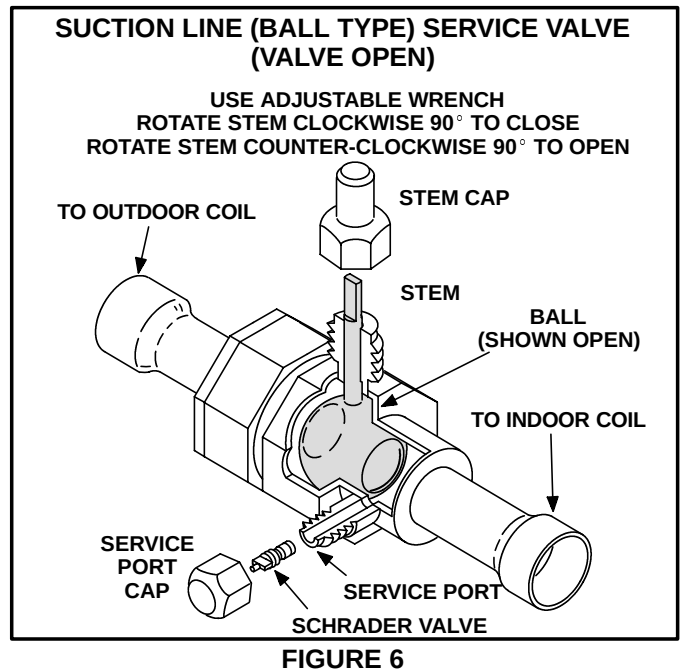


FIGURE 6

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 system. 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.

Using an Electronic Leak Detector or Halide

- 1 - Connect a cylinder of HCFC-22 refrigerant to the center port of the manifold gauge set.
- 2 - With both manifold valves closed, open the valve on the HCFC-22 cylinder (vapor only).
- 3 - Open the high pressure side of the manifold to allow HCFC-22 into the line set and indoor unit. Weigh in a trace amount of HCFC-22. [A trace amount is a maximum of 2 ounces (57g) or 3 pounds (31kPa) pressure.] Close the valve on the HCFC-22 cylinder and the valve on the high pressure side of the manifold gauge set. Disconnect the HCFC-22 cylinder.
- 4 - Connect a cylinder of nitrogen with a pressure regulating valve to the center port of the manifold gauge set.
- 5 - Connect the high pressure hose of the manifold gauge set to the service port of the suction valve. (Normally, the high pressure hose is connected to the liquid line port, however, connecting it to the suction port better protects the manifold gauge set from high pressure damage.)

- 6 - Adjust nitrogen pressure to 150 psig (1034kPa). 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 HCFC-22 mixture. Correct any leaks and recheck.

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 and can lead to improper charge levels.

- 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.
- 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 (23,000 microns) of mercury or approximately 1 inch of mercury. 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 (23,000 microns) 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 (1034kPa) 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.

CAUTION

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 (500 microns) of mercury within a 20 minute period after shutting off the vacuum pump and closing the manifold gauge valves.
- 8 - 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 HCFC-22 refrigerant. Open the manifold gauge valves to break the vacuum in the line set and indoor unit. Close manifold gauge valves and shut off HCFC-22 bottle and remove manifold gauge set.

Start-Up

IMPORTANT

If unit is equipped with crankcase heater, it should be energized 24 hours before unit start-up to prevent compressor damage as a result of slugging.

- 1 - Rotate fan to check for frozen bearings or binding.
- 2 - Inspect all factory and field-installed wiring for loose connections.
- 3 - After evacuation is complete, open liquid line and suction line service valves to release refrigerant charge (contained in condensing unit) into the system.
- 4 - Replace stem caps and secure finger tight, then tighten an additional (1/6) one-sixth of a turn.
- 5 - Check voltage supply at the disconnect switch. The voltage must be within the range listed on unit nameplate. If not, do not start the equipment until the power company has been consulted and the voltage condition corrected.
- 6 - Set the thermostat for cooling demand, turn on power to evaporator blower and close condensing unit disconnect switch to start unit.

7 - Recheck voltage with unit running. Power must be within range shown on nameplate. Check amperage draw of unit. Refer to unit nameplate for correct running amps.

Charging

Units are factory charged with the amount of HCFC-22 refrigerant indicated on the unit rating plate. This charge is based on a matching indoor coil and outdoor coil with 20 ft. (6.1 m) line set. For varying lengths of line set, refer to table 3 for refrigerant charge adjustment. A blank space is provided on the rating plate to list the actual field charge.

TABLE 3

Liquid Line Set Diameter	Oz. per 5 ft. (g per 1.5 m) adjust from 20 ft. (6.1 m) line set*
5/16 in. (8 mm)	2 ounce per 5 ft. (57g per 1.5 m)
3/8 in. (9.5 mm)	3 ounce per 5 ft. (85g per 1.5 m)

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

If the system is void of refrigerant, the recommended and most accurate method of charging is to weigh the refrigerant into the unit according to the total amount shown on the unit nameplate. This may be done after any leaks have been repaired. If weighing facilities are not available or if unit is just low on charge, use one of the procedures outlined.

Charging a condensing unit is recommended during warm weather. However, applications arise in which charging must occur in the colder months. *The way the unit is*

charged depends on the unit's refrigerant metering device and the outdoor ambient temperature.

For RFC systems, **weighing in the charge** and **Subcooling** are two acceptable means of charging under certain conditions. When charging an RFC system when the outdoor ambient is less than 60°F (16°C), the charge should be weighed in according to charge value given on the unit nameplate. However, when an RFC system is being charged when the outdoor ambient is 60°F (16°C) or above, subcooling is the best method.

Weighing in the charge and the **approach** method are the two recommended procedures for charging HS29 units matched with expansion valves. The outdoor ambient temperature determines which charging method should be used. When charging an expansion valve system at an outdoor ambient temperature of 60°F (16°C) or above, the approach method may be used. When charging an expansion valve system at an outdoor ambient temperature below 60°F (16°C), weighing in the charge is recommended.

⚠ IMPORTANT

Use table 4 as a general guide for performing maintenance checks. Table 4 is not a procedure for charging the system. Minor variations in these pressures may be expected due to differences in installations. Significant deviations could mean that the system is not properly charged or that a problem exists with some component in the system. Used prudently, table 4 could serve as a useful service guide.

TABLE 4

NORMAL OPERATING PRESSURES IN PSIG (LIQUID +/- 10 AND SUCTION +/- 5 PSIG)*																	
MODE	OUT. COIL ENTERING AIR TEMP. °F (°C)	HS29-012		HS29-018		HS29-024		HS29-030		HS29-036		HS29-042		HS29-048		HS29-060	
		LIQ	SUC	LIQ	SUC	LIQ	SUC	LIQ	SUC	LIQ	SUC	LIQ	SUC	LIQ	SUC	LIQ	SUC
RFCIV	65 (18.3)	145	71	155	65	160	65	160	64	165	62	166	67	160	66	159	64
	75 (23.9)	167	77	181	70	188	70	185	67	192	66	194	70	187	69	188	68
	85 (29.4)	192	81	208	75	216	74	216	71	223	69	223	72	208	71	219	72
	95 (35.0)	221	84	238	80	247	78	248	73	257	71	257	75	249	75	253	75
	105 (40.6)	253	87	270	84	280	82	284	76	292	73	291	76	284	77	287	76
TXV	65 (18.3)	140	79	159	73	164	71	154	68	162	66	156	70	158	71	151	69
	75 (23.9)	161	80	183	75	189	73	174	70	190	67	184	71	188	73	179	71
	85 (29.4)	189	81	209	77	217	75	204	70	224	68	214	72	210	73	211	73
	95 (35.0)	220	83	238	80	247	78	246	72	257	71	261	74	253	75	249	74
	105 (40.6)	254	84	269	82	279	80	276	74	296	72	291	75	291	76	286	75

*These are typical pressures only. Indoor evaporator match up, indoor air quality and evaporator load will cause the pressures to vary.

Before charging the unit, follow the procedure below to determine: the liquid line temperature and the outdoor ambient temperature.

- 1 - Connect manifold gauge set to service valves: low pressure gauge to suction valve service port; high pressure gauge to liquid valve service port. Connect the center manifold hose to an upright cylinder of HCFC-22. Close manifold gauge set valves.
- 2 - Set the room thermostat to call for heat. This will create the necessary load for properly charging the system in the cooling cycle.
- 3 - Record the outdoor ambient temperature using a digital thermometer.
- 4 - When thermostat demand has been satisfied, switch to cooling mode with a set point of 68°F (20°C). When pressures have stabilized, use the digital thermometer to record the liquid line temperature.
- 5 - The outdoor temperature will determine which charging method to use. Proceed with the appropriate charging procedure below.

Charging for RFC Systems

Weighing in the Charge

RFC Systems, < 60° F (16° C) Outdoor Temp.

- 1 - Recover the refrigerant from the unit.

- 2 - Conduct a leak check, then evacuate as previously outlined.

- 3 - Weigh in the factory charge as shown on the outdoor unit's nameplate.

Charging using Subcooling Values

RFC Systems, ≥ 60° F (16° C) Outdoor Temp.

- 1 - With the manifold gauge hose still on the liquid service port and the unit operating stably, record the liquid line temperature.
- 2 - At the same time, record the liquid line pressure reading.
- 3 - Using a temperature/pressure chart for HCFC-22, determine the saturation temperature for the liquid line pressure reading.
- 4 - Subtract the liquid line temperature from the saturation temperature (according to the chart) to determine subcooling. **(Saturation temperature - Liquid line temperature = Subcooling)**
- 5 - Compare the subcooling value with those in table 5. If subcooling is greater than shown, some refrigerant must be recovered. If subcooling is less than shown, some refrigerant must be added.

TABLE 5
SUBCOOLING VALUES FOR RFC SYSTEMS

OUTDOOR TEMP. °F (°C)	LIQUID SUBCOOLING [± 1°F (.6°C)]							
	-012	-018	-024	-030	-036	-042	-048	-060
60 (16)	14 (7.8)	17 (9.5)	18 (10)	14 (7.8)	13 (7.2)	12 (6.7)	11 (6.1)	13 (7.2)
65 (18)	13 (7.2)	16 (8.9)	16 (8.9)	14 (7.8)	13 (7.2)	11 (6.1)	10 (5.6)	12 (6.7)
70 (21)	12 (6.7)	15 (8.3)	14 (7.8)	13 (7.2)	12 (6.7)	11 (6.1)	10 (5.6)	12 (6.7)
75 (24)	10 (5.6)	14 (7.8)	12 (6.7)	13 (7.2)	12 (6.7)	10 (5.6)	10 (5.6)	12 (6.7)
80 (27)	9 (5)	13 (7.2)	11 (6.1)	13 (7.2)	12 (6.7)	10 (5.6)	10 (5.6)	12 (6.7)
85 (29)	8 (4.5)	12 (6.7)	10 (5.6)	13 (7.2)	11 (6.1)	10 (5.6)	9 (5)	11 (6.1)
90 (32)	7 (3.9)	11 (6.1)	9 (5)	13 (7.2)	11 (6.1)	9 (5)	9 (5)	11 (6.1)
95 (35)	6 (3.3)	9 (5)	8 (4.5)	12 (6.7)	11 (6.1)	9 (5)	9 (5)	11 (6.1)
100 (38)	4 (2.2)	8 (4.5)	7 (3.9)	12 (6.7)	10 (5.6)	8 (4.5)	8 (4.5)	10 (5.6)
105 (41)	2 (1.1)	7 (3.9)	6 (3.3)	11 (6.1)	10 (5.6)	7 (3.9)	8 (4.5)	10 (5.6)
110 (43)	2 (1.1)	6 (3.3)	6 (3.3)	11 (6.1)	9 (5)	6 (3.3)	7 (3.9)	9 (5)
115 (45)	1 (0.6)	5 (2.8)	5 (2.8)	10 (5.6)	9 (5)	5 (2.8)	6 (3.3)	8 (4.5)

Charging for TXV Systems

Weighing in the Charge

TXV Systems, < 60° F (16° C) Outdoor Temp.

- 1 - Recover the refrigerant from the unit.
- 2 - Conduct a leak check, then evacuate as previously outlined.
- 3 - Weigh in the factory charge as shown on the outdoor unit's rating plate.

Charging Using Approach Values

TXV Systems, ≥ 60° F (16° C) Outdoor Temp.

Having taken the outdoor ambient and liquid line temperature readings, subtract the outdoor ambient temperature from the liquid line temperature to determine the Approach temperature. **(Liquid line °F (°C) - Outdoor Ambient °F (°C) = Approach temperature)** The resulting difference (Approach temperature) should agree with the values given in table 6. If not, add refrigerant to lower the approach temperature or recover refrigerant from the system to increase the approach temperature.

TABLE 6
APPROACH VALUES

MODEL NO.	APPROACH TEMPERATURE LIQUID LINE - OUTDOOR AMBIENT °F (°C)
HS29-012	7 (3.9)
HS29-018	4 (2.2)
HS29-024	5 (2.8)
HS29-030	11 (6.1)
HS29-036	14 (7.8)
HS29-042	17 (9.4)
HS29-048	12 (6.7)
HS29-060	12 (6.7)

System Operation

Condensing unit and indoor blower cycle on demand from room thermostat. When thermostat blower switch is switched to **ON** position, indoor blower operates continuously.

Compressor Start Kit

1, 1-1/2 and 2 ton single phase units have internal start components and do not require field installation of a compressor start kit.

Timed-Off Control (Units with factory-installed options)

Units with factory-equipped options include a timed-off control which helps equalize system pressures. The timed-off control delays compressor start-up for five minutes on thermostat demand. This allows the compressor

to start in an unloaded condition and prevents compressor short-cycling. The control is located in the control box and is wired between thermostat terminal "Y" and the compressor contactor.

High and Low Pressure Switches (international units and units with factory-installed options)

International units and units with factory-equipped options include high and low pressure switches. The pressure switches are located on valve cores in the liquid line to allow for easy access. The manually reset high pressure switch protects the system from high pressure conditions as a result of a fan failure or a blocked or dirty coil. The low pressure switch (SPST, NO) protects the system compressor from damage due to a loss of charge. The low pressure switch trips at 15 + 5 psig (103 + 34 kPa) and automatically resets at 25 + 3 psig (172 + 21 kPa).

Refrigerant Sight Glass (Units with options)

An optional refrigerant sight glass may be provided (in the bag assembly) with the unit. The sight glass should be field-installed in the liquid line to monitor the system refrigerant.

Maintenance

⚠ 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.

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

- 1 - Clean and inspect condenser coil. Coil may be flushed with a water hose. Make sure power is off before cleaning.
- 2 - Visually inspect connecting lines and coils for evidence of oil leaks.
- 3 - Check wiring for loose connections.
- 4 - Check for correct voltage at unit (unit operating).
- 5 - Check condenser fan motor amp-draw.

Unit nameplate _____ Actual _____ .

NOTE - If owner complains of insufficient cooling, the unit should be gauged and refrigerant charge checked. Refer to section on refrigerant charging in this instruction.

Evaporator Coil

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

Indoor Unit

- 1 - Clean or change filters.

2 - Adjust blower speed for cooling. The pressure drop over the coil should be measured to determine the correct blower CFM. Refer to the unit information service manual for pressure drop tables and procedure.

3 - *Belt Drive Blowers* — Check belt for wear and proper

tension.

4 - Check all wiring for loose connections

5 - Check for correct voltage at unit (blower operating).

6 - Check amp-draw on blower motor

Unit nameplate _____ Actual _____.

Start-Up & Performance Check List

Job Name _____ Job No. _____ Date _____

Job Location _____ City _____ State _____

Installer _____ City _____ State _____

Unit Model No. _____ Serial No. _____ Service technician _____

Nameplate Voltage _____ Amps: _____

Minimum Circuit Ampacity _____ Supply _____ Condenser Fan _____

Maximum Overcurrent Protection Size _____ Compressor _____

Electrical Connections Tight? ☐

Indoor Filter Clean? ☐

Indoor Blower CFM _____

Supply Voltage (Unit Off) _____ S.P. Drop Over Evaporator (Dry) _____

COOLING SECTION

Refrigerant Lines:

Leak Checked? ☐

Condenser Entering Air Temperature _____

Service Valves Fully Open? ☐

Discharge Pressure _____ Suction Pressure _____

Properly Insulated? ☐

Refrigerant Charge Checked? ☐

Service Valve Caps Tight? ☐

Condenser Fan Checked? ☐

Voltage With Compressor Operating _____

THERMOSTAT

Properly Set? ☐

Level? ☐