Outdoor Heat Pump

User's Information/Installation Instructions

13 SEER High Efficiency Split System

These units have been designed and tested for capacity and efficiency in accordance with A.R.I. Standards. Split System Heat Pump units are designed for use with a wide variety of fossil fuel furnaces, electric furnaces, air handlers, and evaporator coil combinations.

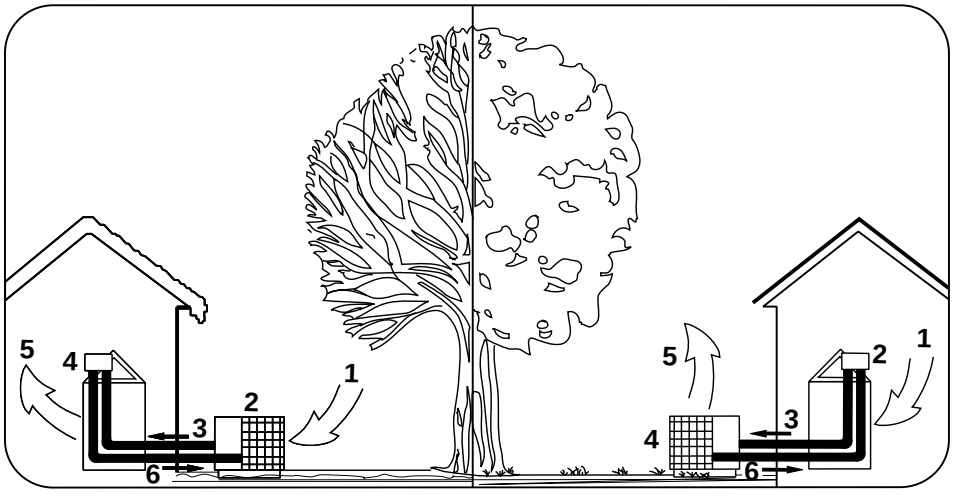
These instructions are primarily intended to assist qualified individuals experienced in the proper installation of heating and/or air conditioning appliances. Some local codes require licensed installation/service personnel for this type of equipment. Read all instructions carefully before starting the installation.

USER'S INFORMATION

IMPORTANT

Read this owner information to become familiar with the capabilities and use of your appliance. Keep this with literature on other appliances where you have easy access to it in the future. If a problem occurs, check the instructions and follow recommendations given. If these suggestions don't eliminate your problem, call your servicing contractor.

Heat Pump Principle of Operation



WINTER HEATING

1. Outdoor air enters heat pump.
2. Cold, heat-transfer section (outdoor coil) extracts heat from outdoor air as refrigerant evaporates from a liquid to a gas.
3. Refrigerant, compressed to a hot gas by heat pump, carries the heat to the hot heat-transfer section (indoor coil).
4. Hot, heat-transfer section (indoor coil) releases the heat to indoor air as refrigerant condenses from a gas to a liquid.
5. Air handler circulates the heat throughout the home.
6. Refrigerant returns to outdoor coil and evaporates once again to absorb more heat.

SUMMER COOLING

1. Indoor air enters the air handler section.
2. Cold, heat-transfer section (indoor coil) extracts heat from indoor air as refrigerant evaporates from a liquid to a cold gas.
3. Refrigerant, drawn to heat pump and compressed to a hot gas by heat pump, carries the heat outdoors.
4. Hot, heat-transfer section (outdoor coil) releases the heat as refrigerant condenses from a gas to a liquid.
5. Heat pump (outdoor fan) discharges the heat to outside air.
6. Refrigerant returns to indoor coil and evaporates once again to absorb more heat.

OPERATING INSTRUCTIONS

TO OPERATE YOUR HEAT PUMP FOR COOLING —

1. Set the thermostat system switch to COOL and the thermostat fan switch to AUTO. **(See Figure 1)**
2. Set the thermostat temperature to the desired temperature level using the temperature selector. Please refer to the separate detailed thermostat user's manual for complete instructions regarding thermostat programming. The outdoor unit and indoor blower will both cycle on and off to maintain the indoor temperature at the desired cooling level.

   NOTE: If the thermostat temperature level is re-adjusted, or the thermostat system switch is repositioned, the outdoor unit may not start immediately. The outdoor unit contains a protective timer circuit which holds the unit off for approximately five minutes following a previous operation, or the interruption of the main electrical power.

TO OPERATE YOUR HEAT PUMP FOR HEATING —

1. Set the thermostat system switch to HEAT and the thermostat fan switch to AUTO. **(See Figure 1)**
2. Set the thermostat temperature to the desired temperature level using the temperature selector. Please refer to the separate detailed thermostat user's manual for complete instructions regarding thermostat programming. The outdoor unit and indoor blower will both cycle on and off to maintain the indoor temperature at the desired heating level.

NOTE: If the thermostat temperature level is re-adjusted, or the thermostat system switch is repositioned, the outdoor unit may not start immediately. The outdoor unit contains a protective timer circuit which holds the unit off for approximately five minutes following a previous operation, or the interruption of the main electrical power.

Emergency Heat:

The thermostat includes a system switch position termed EM. HT. This is a back-up heating mode to be used only if there is a suspected problem with the outdoor unit. With the system switch set to EM. HT. the outdoor unit will be locked off, and supplemental heat (typically electric resistance heating) will be used as a source of heat. Sustained use of electric resistance heat in place of the heat pump will result in an increase in electric utility costs.

Defrost:

During cold weather heating operation, the outdoor unit will develop a coating of snow and ice on the heat transfer coil. This is normal, and the unit will periodically defrost itself. During the defrost cycle, the outdoor fan will stop, and the compressor will continue to run and heat the outdoor coil, causing the snow and ice to melt. After the snow and ice have melted, some steam may rise from the outdoor unit as the warm coil causes some melted frost to evaporate.

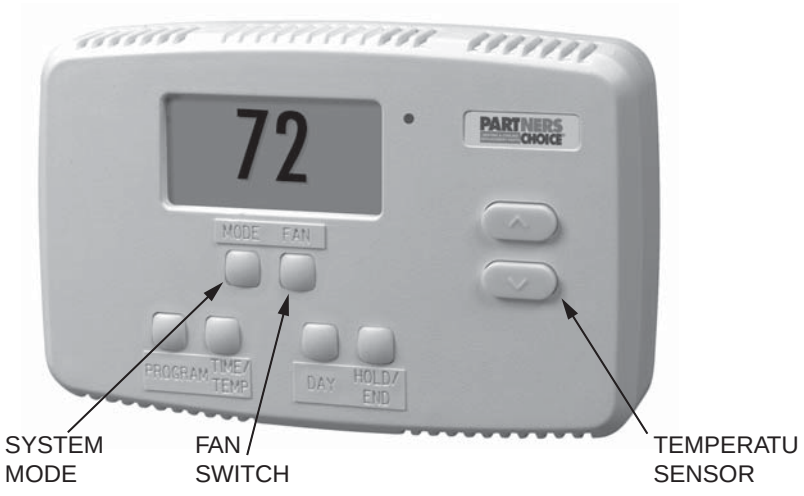


Figure 1. Typical Thermostat

TO OPERATE YOUR HEAT PUMP FOR AUTOMATIC COOLING AND HEATING—

1. Set the thermostat system switch to AUTO and the thermostat fan switch to AUTO. **(See Figure 1)**

   Note: Thermostats will vary. Some models will not include the AUTO mode, and others will have the AUTO in place of the HEAT and COOL, and some will include all three.

2. Set the thermostat temperature to the desired heating and cooling temperature level(s). The outdoor unit and the indoor blower will then cycle on and off in either the heating or cooling mode of operation as required to automatically maintain the indoor temperature within the desired limits.

TO SHUT OFF YOUR HEAT PUMP—

Set the thermostat system switch to OFF and the thermostat fan switch to AUTO. **(See Figure 1)** The system will not operate, regardless of the thermostat temperature selector(s) setting.

TO OPERATE THE INDOOR BLOWER CONTINUOUSLY—

Set the thermostat fan switch to ON **(See Figure 1)**. The indoor blower will start immediately, and will run continually until the fan switch is reset to AUTO.

The continuous indoor blower operation can be obtained with the thermostat system switch set in any position, including OFF.

The continuous indoor blower operation is typically used to circulate the indoor air to equalize a temperature unbalance due to a sun load, cooking, or fireplace operation.

TO MAINTAIN YOUR HEAT PUMP—

⚠ CAUTION:

Be certain the electrical power to the outdoor unit and the furnace/ air handler is disconnected before doing the following recommended maintenance.

1. Regularly:

a. Clean or replace the indoor air filter at the start of each heating and cooling season, and when an accumulation of dust and dirt is visible on the air filter. Inspect the filter monthly.

b. Remove any leaves and grass clippings from the coil in the outdoor unit, being careful not to damage the aluminum fins.

c. Check for any obstruction such as twigs, sticks, etc.

d. Certain models have external panels fabricated from a premium grade of stainless steel designed to inhibit corrosion. For such units, if the unit is located in a coastal region or other area subjected to high concentrations of salt, then the unit should be hosed off after storms and monthly otherwise to maintain its new appearance.

⚠ CAUTION:

Do not over-oil, or oil motors not factory-equipped with oil tubes. The compressor is hermetically "sealed" and does not require lubrication.

2. Before Calling a Service Technician, Be Certain:

a. The unit thermostat is properly set—see "To Operate Your Heat Pump for Cooling" and "To Operate Your Heat Pump for Heating."

b. The unit disconnect fuses are in good condition, and the electrical power to the unit is turned on.

Read Your Warranty

Please read the separate warranty document completely. It contains valuable information about your system.

GENERAL INFORMATION

Read the following instructions completely before performing the installation.

Outdoor Unit Section — Each outdoor unit is shipped with a refrigerant charge adequate to operate the outdoor section with an indoor matching coil or air handler. Units with braze connections include the proper amount of refrigerant for an additional 15 ft. of refrigerant lines the same size as the valve fittings.

NOTE: DO NOT USE ANY PORTION OF THE CHARGE FOR PURGING OR LEAK TESTING.

Matching coils and air handlers may be shipped with a small holding charge to pressurize them to keep out contaminants. To release the pressure, read the indoor section installation instructions carefully.

Liquid and Suction Lines — Fully annealed, refrigerant grade copper tubing should be used when installing the system. Refrigerant suction line tubing should be fully insulated.

Field Connections for Electrical Power Supply — All wiring must comply with current provisions of the "National Electrical Code" (ANSI/NFPA 70) and with applicable local codes having jurisdiction. The minimum size of electrical conductors and circuit protection must be in compliance with information listed on the outdoor unit data label.

SAFETY CONSIDERATIONS

Pressures within the System — Split system heat pump equipment contains liquid and gaseous refrigerant under pressure. Installation and servicing of this equipment should be accomplished by qualified, trained personnel thoroughly familiar with this type of equipment. Under no circumstances should the Homeowner attempt to install and/or service the equipment.

Labels, Tags, Precautions — When working with this equipment, follow all precautions in the literature, on tags, and on labels provided with the equipment. Read and thoroughly understand the instructions provided with the equipment prior to performing the installation and operational checkout of the equipment.

Brazing Operations — Installation of equipment may require brazing operations. Safety codes must be complied with. Safety equipment (e.g.; safety glasses, work gloves, fire extinguisher, etc.) must be used when performing brazing operations.

⚠ WARNING:

Ensure all electrical power to the unit is off prior to installing or servicing the equipment. Failure to do so may cause personal injury or death.

SITE PREPARATION

Unpacking Equipment — Remove the cardboard carton and User's Manual from the equipment. Take care to not damage tubing connections when removing from the carton.

Inspect for Damage — Inspect the equipment for damage prior to installing the equipment at the job site. Ensure coil fins are straight and, if necessary, comb fins to remove flattened and bent fins.

Preferred Location of the Outdoor Unit at the Job Site — Conduct a survey of the job site to determine the optimum location for mounting the outdoor unit. Overhead obstructions, poorly ventilated areas, and areas subject to accumulation of debris should be avoided. The outdoor unit should be installed no closer than 18 inches from the outside walls of the facility and in an area free from overhead obstructions to ensure unrestricted airflow through the outdoor unit.

Facility Prerequisites — Electrical power supplied must be adequate for proper operation of the equipment. The system must be wired and provided with circuit protection in accordance with local building codes and the National Electrical Code.

INSTALLING THE OUTDOOR UNIT

Slab Mount — The site selected for a slab mount installation requires a stable foundation and one not subject to erosion. The slab should be level and anchored (if necessary) prior to placing the equipment on the slab.

Cantilever Mount — The cantilever mount should be designed with adequate safety factor to support the weight of the equipment, and for loads subjected to the mount during operation. Installed equipment should be adequately secured to the cantilever mount and levelled prior to operation of the equipment.

Roof Mount — The method of mounting should be designed so as not to overload roof structures nor transmit noise to the interior of the structure. Refrigerant and electrical line should be routed through suitably waterproofed openings to prevent water leaking into the structure.

INSTALLING THE INDOOR UNIT

The indoor section should be installed before proceeding with routing of refrigerant piping. Consult the Installation Instructions of the indoor unit (i.e.: air handler, furnace, etc.) for details regarding installation.

CONNECTING REFRIGERANT TUBING BETWEEN THE INDOOR AND OUTDOOR UNIT

General — Once outdoor and indoor unit placement has been determined, route refrigerant tubing between the equipment in accordance with sound installation practices. Refrigerant tubing should be routed in a manner that minimizes the length of tubing and the number of bends in the tubing. Refrigerant tubing should be supported in a manner that the tubing will not vibrate or abrade during system operation. Tubing should be kept clean of foreign debris during installation and installation of a liquid line filter drier is recommended if cleanliness or adequacy of system evacuation is unknown or compromised. Every effort should be made by the installer to ensure that the field installed, refrigerant containing components of the system have been installed in accordance with these instructions and sound installation practices so as to insure reliable system operation and longevity.

The maximum recommended interconnecting refrigerant line length is 75 feet, and the vertical elevation difference between the indoor and outdoor sections should not exceed 20 feet. Consult long line application guide for installations in excess of these limits.

Filter Dryer Installation — A filter dryer is provided with PS series models only and must be installed in the liquid line of the system. If the installation replaces a system with a filter dryer already present in the liquid line, the filter dryer must be replaced with the one supplied with the unit. The filter dryer must be installed in strict accordance with the manufacturer's installation instructions.

For all other series models, installing a filter dryer is optional. However, it is good installation practice to install a filter dryer when replacing the evaporator and/or condenser of a system. When installing, the filter dryer must be installed in strict accordance with the manufacturer's installation instructions.

Optional Equipment — Optional equipment (e.g.: liquid line solenoid valves, etc.) should be installed in strict accordance with the manufacturer's installation instructions.

ELECTRICAL CONNECTIONS

⚠ WARNING:

Turn off all electrical power at the main circuit box before wiring electrical power to the outdoor unit. Failure to comply may cause severe personnel injury or death.

Wiring Diagram/Schematic — A wiring diagram/schematic is located on the inside cover of the electrical box of the outdoor unit. The installer should become familiar with the wiring diagram/schematic before making any electrical connections to the outdoor unit.

Outdoor Unit Connections — The outdoor unit requires both power and control circuit electrical connections. Refer to the unit wiring diagram/schematic for identification and location of outdoor unit field wiring interfaces.

Control Circuit Wiring — The outdoor unit is designed to operate from a 24 VAC Class II control circuit. Control circuit wiring must comply with the current provisions of the "National Electrical Code" (ANSI/NFPA 70) and with applicable local codes having jurisdiction.

Thermostat connections should be made in accordance with the instructions supplied with the thermostat, and with the instructions supplied with the indoor equipment. A typical residential installation with a heat pump thermostat and air handler are shown below.

Electrical Power Wiring — Electrical power wiring must comply with the current provisions of the "National Electrical Code" (ANSI/NFPA 70) and with applicable local codes having jurisdiction. Use of rain tight conduit is recommended. Electrical conductors shall have minimum circuit ampacity in compliance with the outdoor unit rating label. The facility shall employ electrical circuit protection at a current rating no greater than that indicated on the outdoor unit rating label. Refer to the unit wiring diagram for connection details.

Minimum Circuit Ampacity — Electrical wiring to the equipment must be compatible and in compliance with the minimum circuit ampacity listed on the outdoor unit data label.

Maximum Fuse/Circuit Breaker Size — Circuit protection for the outdoor unit must be compatible

with the maximum fuse/circuit breaker size listed on the outdoor unit data label.

Disconnect Switch — An electrically compatible disconnect switch must be within line of sight of the outdoor unit. This switch shall be capable of electrically de-energizing the outdoor unit.

Optional Equipment — Optional equipment requiring connection to the power or control circuits must be wired in strict accordance with current provisions of the "National Electrical Code" (ANSI/NFPA 70), with applicable local codes having jurisdiction, and the installation instructions provided with the equipment. Optional Equipment (e.g.: liquid line solenoid valves, hard start kits, low suction pressure cutout switch kit, high pressure cutout switch kit, refrigerant compressor crankcase heater, etc.) should be installed in strict accordance with the manufacturer's installation instructions.

STARTUP AND CHECKOUT

⚠ WARNING:

Ensure electrical power to the unit is off prior to performing the following steps. Failure to do so may cause personal injury or death.

Air Filters — Ensure air filters are clean and in place prior to operating the equipment.

Thermostat — Set the room thermostat function switch to OFF, fan switch to AUTO, and adjust the temperature setpoint to its highest setting.

COPPER WIRE SIZE — AWG (1% Voltage Drop)				
Supply Wire Length-Feet				Supply Circuit
200	150	100	50	Ampacity
6	8	10	14	15
4	6	8	12	20
4	6	8	10	25
4	4	6	10	30
3	4	6	8	35
3	4	6	8	40
2	3	4	6	45
2	3	4	6	50

Wire Size based on N.E.C. for 60° type copper conductors.

Prior to applying electrical power to the outdoor unit, ensure that the unit has been properly and securely grounded, and that power supply connections have been made at both the facility power interface and outdoor unit.

Outdoor Unit — Ensure the outdoor coil and top of the unit are free from obstructions and debris, and all equipment access/control panels are in place.

Using extreme caution, apply power to the unit and inspect the wiring for evidence of open, shorted, and/or improperly wired circuits.

Functional Checkout:

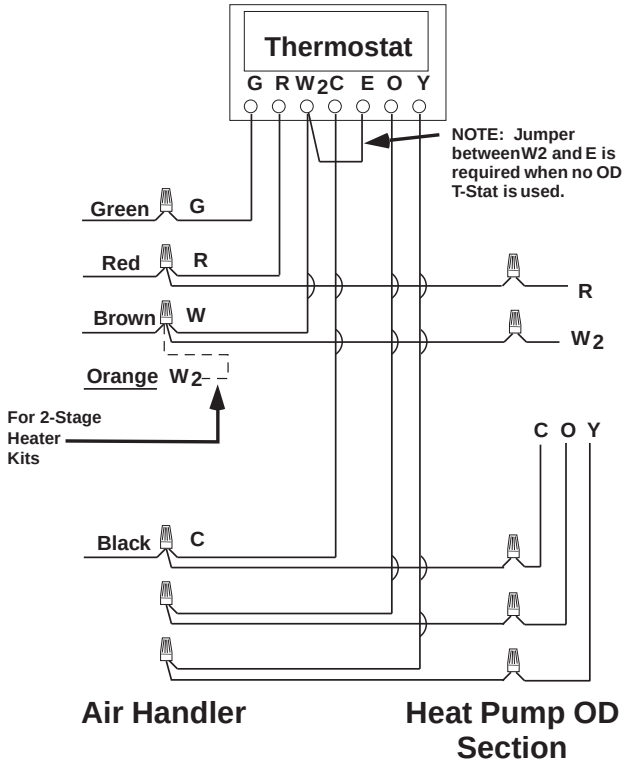
⚠ CAUTION:

If equipped with a compressor crankcase heater, wait 24 hours prior to performing a function checkout to allow for heating of the compressor crankcase. Failure to comply may result in damage and could cause premature failure of the system.

Indoor Blower — Set the thermostat function switch to COOLING and the fan switch to ON. Verify that the indoor blower is operating and that airflow is not restricted. Set the fan switch back to AUTO.

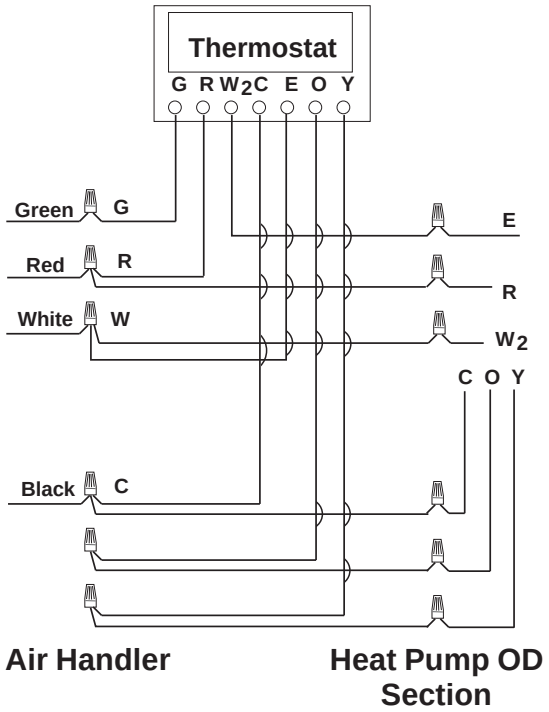
Positive Temperature Coefficient Resistor (PTCR) — (select models) A PTCR is factory installed and located on the control panel of the outdoor unit. The PTCR is a soft start device for use with reciprocating compressors. If a hard start kit is needed on this model the soft start (PTCR) must be removed first.

Low-Pressure Switch — A low-pressure switch is factory-installed in select models only. If provided, this switch is located in the suction line internal to the outdoor unit. The switch is designed to protect the compressor from a loss of charge. Under normal conditions, the switch is closed. If the suction pressure falls below 5 psig, then the switch will open and de-energize the outdoor unit. The switch will close again once the suction pressure increases above 20 psig. Please note that the switch interrupts the thermostat inputs to the unit. Thus, when the switch opens and then closes, there will be a 5 minute short cycling delay before the outdoor unit will energize.



Typical Heat Pump with Standard Air Handler

A typical installation with a heat pump thermostat, air handler, and heat pump with an outdoor thermostat.



Typical Heat Pump with Outdoor Thermostat and Air Handler

Cooling — Gradually lower the thermostat temperature setpoint below the actual room temperature and observe that the outdoor unit and indoor blower energize. Feel the air being circulated by the indoor blower and verify that it is cooler than ambient temperature. Listen for any unusual noises. If present, locate and determine the source of the noise and correct as necessary.

Short Cycle Protection — With the system operating in COOLING mode, note the setpoint temperature setting of the thermostat, and gradually raise the setpoint temperature until the outdoor unit and indoor blower de-energize. Immediately lower the setpoint temperature of the thermostat to its original setting and verify that the indoor blower is energized and that the outdoor unit remains de-energized. Verify that, after approximately 5 minutes, the outdoor unit energizes and that the temperature of the air supplied to the facility is cooler than ambient temperature.

Heating — Lower the thermostat setpoint temperature to the lowest obtainable setting and set the thermostat function switch to HEATING. The indoor blower and outdoor unit should stop running. After a minimum of five minutes, increase the setpoint temperature of the thermostat to the maximum setting. Verify that the outdoor unit and indoor blower have energized. Feel the air being circulated by the indoor blower and verify that it is warmer than ambient temperature. Listen for any unusual noises. If present, locate and determine the source of the noise and correct as necessary.

NOTE: Other sources for heating (i.e.: electric furnace, fossil fuel furnace, air handler with electric heat options, etc.) that interface with the unit should be functionally checked to verify system operation and compatibility. Refer to the installation instructions for this equipment and perform a functional checkout in accordance with the manufacturer's instructions.

OUTDOOR THERMOSTAT (if supplied)

The outdoor thermostat prevents the electrical auxiliary heat (if used) from operating above 40°F outdoor ambient temperature.

Defrost Cycle Timer — The defrost cycle timer controls the time interval of the hot gas defrost after the defrost sensor closes. It is located in the lower left corner of the defrost control board. Three interval settings are available: 30 minutes, 60 minutes, and 90 minutes. Time setting selection is dependent on the climate where the unit is being installed.

Example 1. Dry climate of Southern Arizona. A 90 minute setting is recommended.

Example 2. Moist climate of Seattle, Washington. A 30 minute setting is recommended.

To set the cycle timer, place the timing pin on the defrost control board to the desired time interval post.

Note: All units are shipped from the factory with the default time setting of 30 minutes. Maximum heating performance can be achieved by setting the time to 90 minutes.

DEFROST CONTROL BOARD OPERATION AND TESTING

1. Terminals "R"-"C" must have 24±V present between them in order for the time delay and defrost sequences to be operational.

2. Jumper the "T2"-"DFT" test pins. This will indicate to the board that the defrost T-stat is closed(if the compressor is running). Defrost T-stat is closed at 32° or below and is open at 68° or above. But it's state is unknown if the temperature is between 32°F and 68°F. The defrost thermostat tells the board whether a defrost cycle needs to be started or terminated. With the DFT closed the unit will run for 30/60/90 minutes in heat mode and then defrost the outdoor coil. The defrost will turn off the outdoor fan, turn on the compressor and raise the coil temperature to 68°F. This will open the DFT and terminate the defrost. If the DFT does not open the defrost will end after 10 minutes.

3. Defrost board speed-up. With compressor running in heat mode, next jump the "Test" pin to "C" on terminal strip. This will initiate a defrost test in 5, 10 or 15 seconds (This is determined by the 30, 60 or 90 minute defrost pin settings. The factory setting will be 30 minutes). Note that this will bypass the compressor off delay when the unit goes into defrost test and if left in defrost test, the delay will be bypassed when the test is terminated by the processor. If the jumper is removed before the test is over the processor will perform the remainder of a normal defrost. See step 2 above.

4. Remove the jumpers.

Note: The delay/no-delay pin concerns compressor operation during defrosts. The default setting is delay. Reciprocating compressors

should only use this setting in conjunction with an approved hard start kit. Scroll compressors that have noise issues while going into or coming out of defrost should use this 30 second delay to reduce the defrost noise. To switch from no-delay to delay remove the pin from the “no-delay” pin location and shift it to the “delay” pin location.

Speed up changes:

Manually initiating a defrost will cause the compressor to run continually when entering defrost.

Normal defrost operation:

To test normal defrost operation when the temperature is above 35°F, jumper “R” to “DFT” on the 624656 board and allow the unit to run for 30 minutes. Defrost will continue until the “R” to “DFT” jumper is removed or for 10 minutes. Remove the jumper.

The 5 minute time delay feature can be shortened 1 time to 1 second by jumping the “Test” to “C” terminal. Remove the jumper and repeat as desired.

Note: If jumper is left on the “Test” to “common” pins permanently, the defrost cycle will become inoperable.

Defrost Test Procedure for 624656

1. Jumper “T2” to “DFT” at the test terminals.
2. With unit running in heat mode, short the “TEST” terminal to the common terminal near it. This will speed up the board and cause it to enter defrost mode in 5/10/15 seconds depending on the defrost time selection. Compressor delay will not function during speed-up.
3. This test will end in 5 seconds if the “TEST”-common short is not removed.
4. Remove both the short and the “T2” to “DFT” jumper to terminate the defrost cycle. The 30 second compressor delay should operate normally.
5. Test is complete, reset thermostat to home owner preference.

Optional Equipment — A functional checkout should be performed in accordance with the checkout procedures supplied with the equipment.

Adjustment of Refrigerant Charge:

⚠ CAUTION:

Split system heat pump equipment contains liquid and gaseous refrigerant under pressure. Adjustment of refrigerant charge should only be attempted by qualified, trained personnel thoroughly familiar with the equipment. Under no circumstances should the homeowner attempt to install and/or service this equipment. Failure to comply with this warning could result in equipment damage, personal injury, or death.

NOTE: The following Refrigerant Charging Charts are applicable to listed assemblies of equipment and at listed airflows for the indoor coil. Assemblies of indoor coils and outdoor units not listed are not recommended and deviations from rated airflows or non-listed equipment combinations may require modifications to the expansion device(s) and refrigerant charging procedures for proper and efficient system operation.

Refrigerant Charging Chart — Refer to Refrigerant Charging Charts for correct system charging, and to Orifice Usage Chart for correct restrictor sizes.

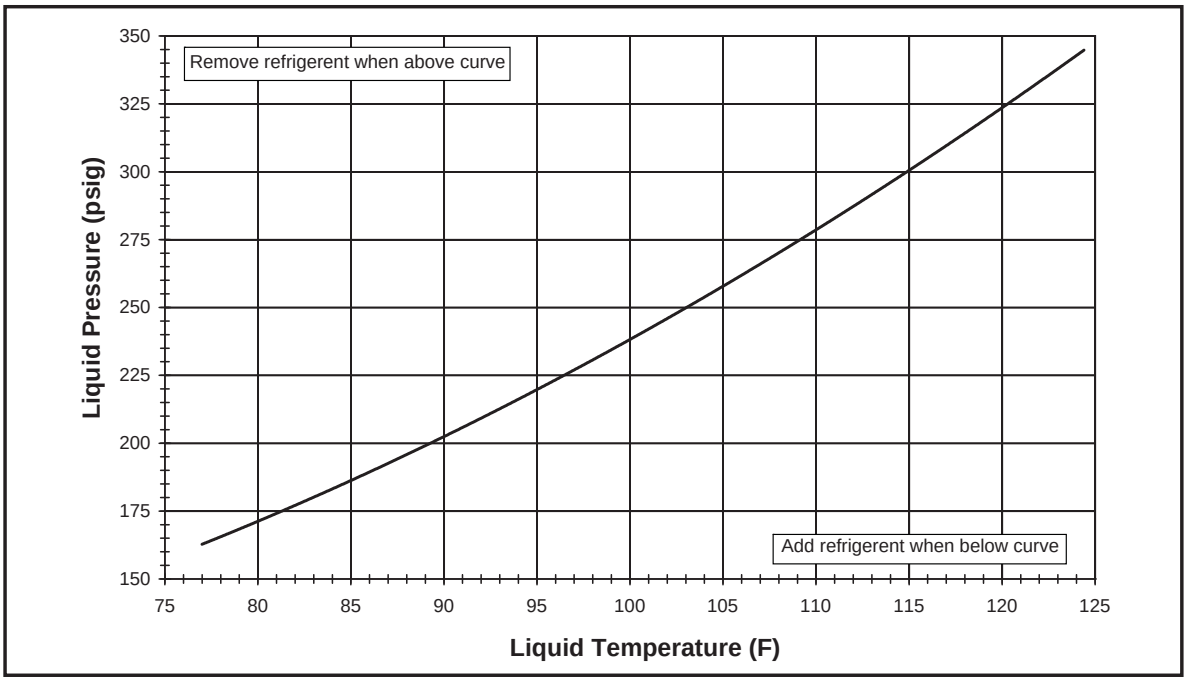
NOTE: Linesets over 15 feet in length may require additional refrigerant charge. NORDYNE recommends 0.6 oz. of refrigerant per foot for any lineset over 15 feet.

13 SEER Split System Heat Pump Orifice

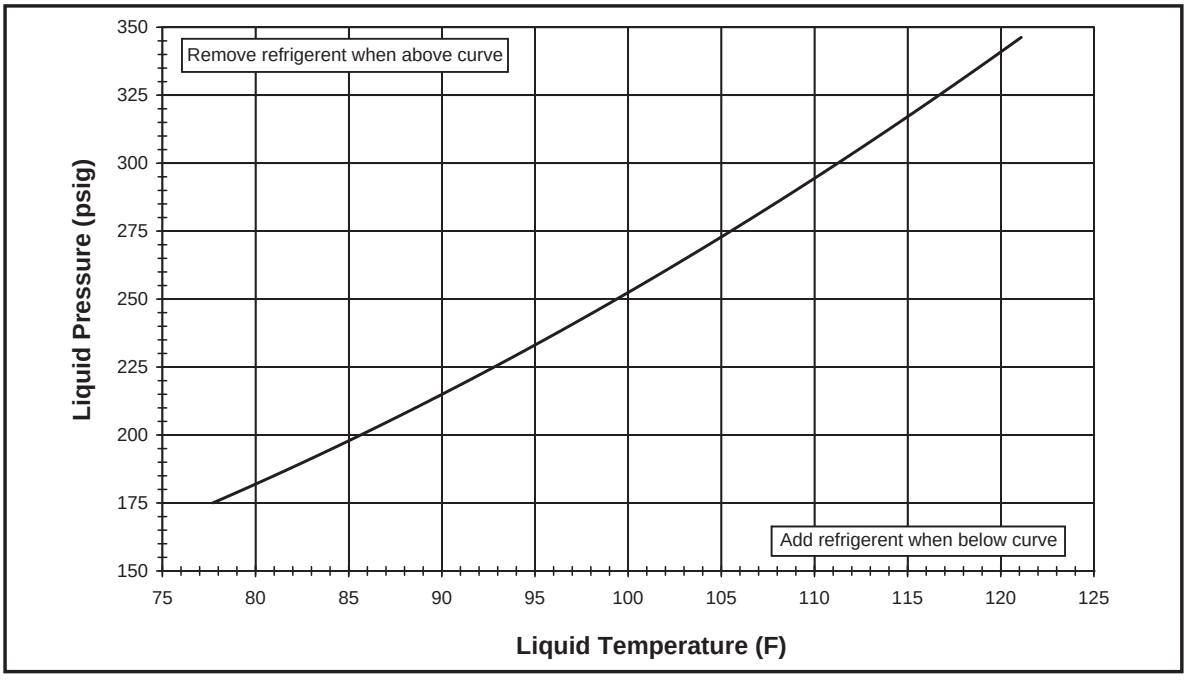
Model Number	Restrictor Bore Size (in)		System Charge R-22(oz.)
	Indoor	Outdoor	
1.5 ton	TXV ONLY	0.041	86
2.0 ton	TXV ONLY	0.047	109
2.5 ton	TXV ONLY	0.053	128
3.0 ton	TXV ONLY	0.055	154
3.5 ton	TXV ONLY	0.055	189
4.0 ton	TXV ONLY	0.065	253
5.0 ton	TXV ONLY	0.067	268

TXV Refrigerant Charging Chart

1.5 Ton HP TXV Charging Chart

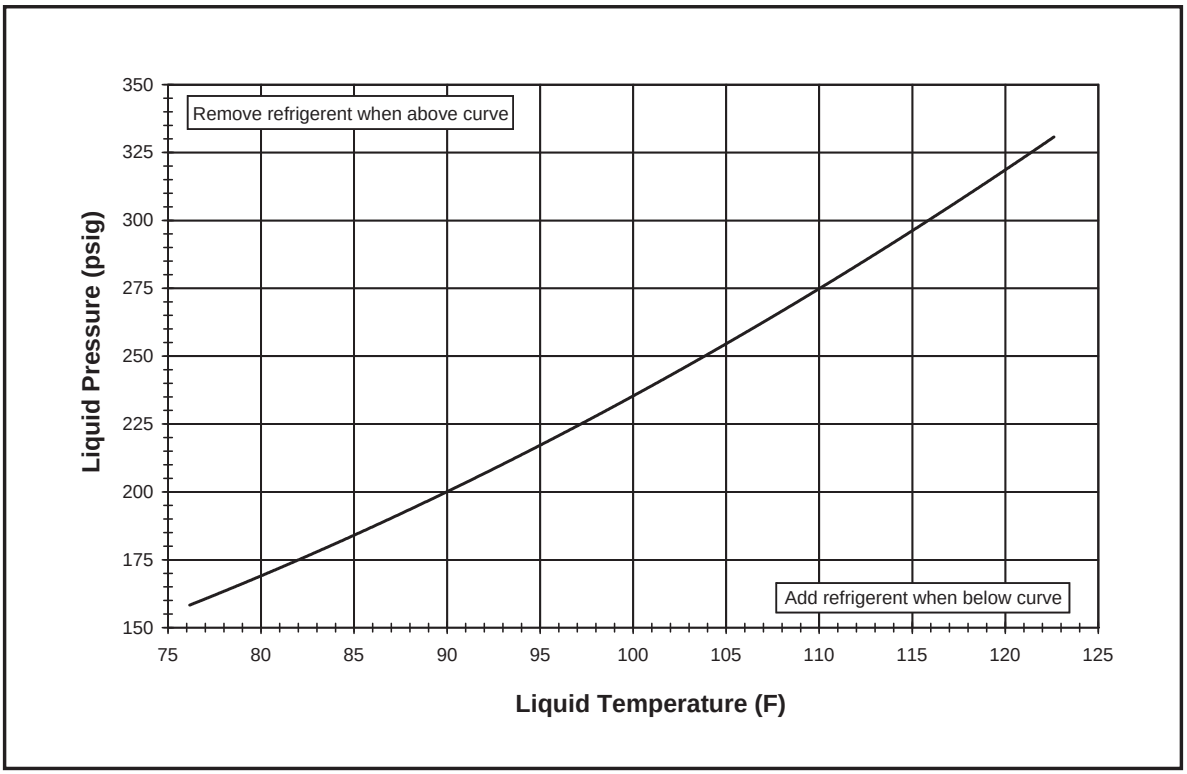


2.0 Ton HP Charging Chart

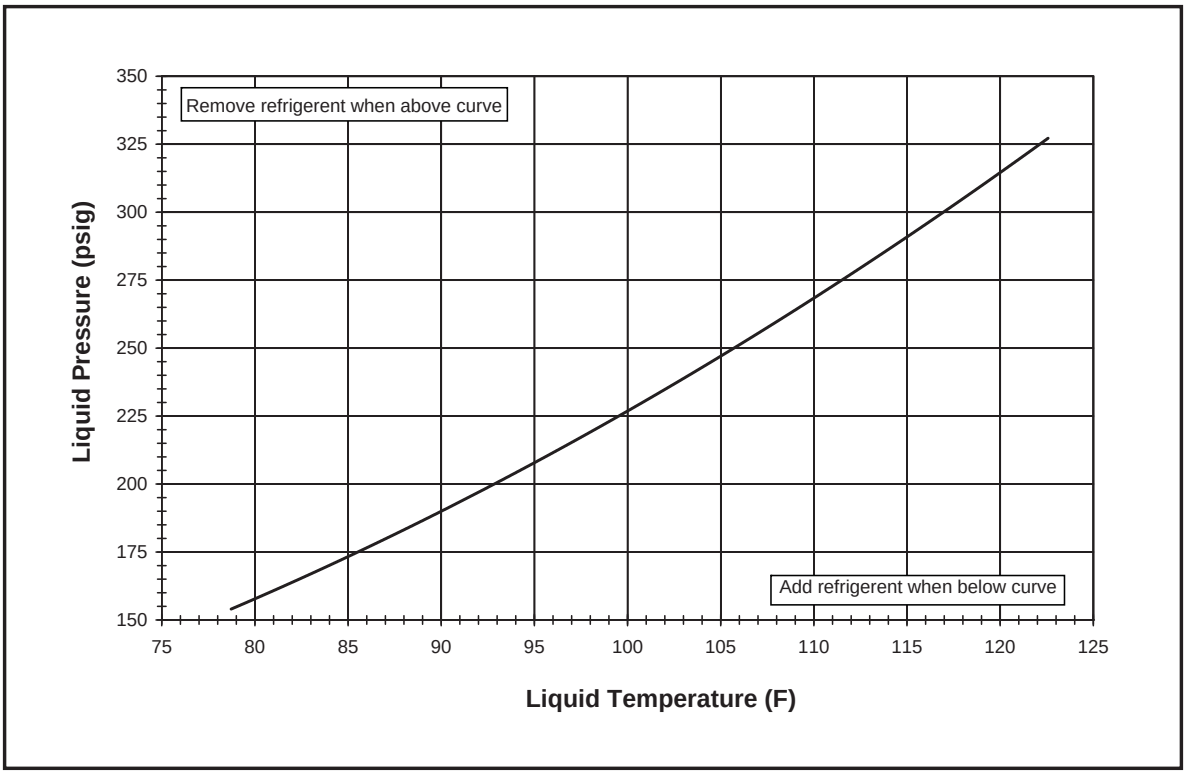


TXV Refrigerant Charging Chart

2.5 Ton HP TXV Charging Chart

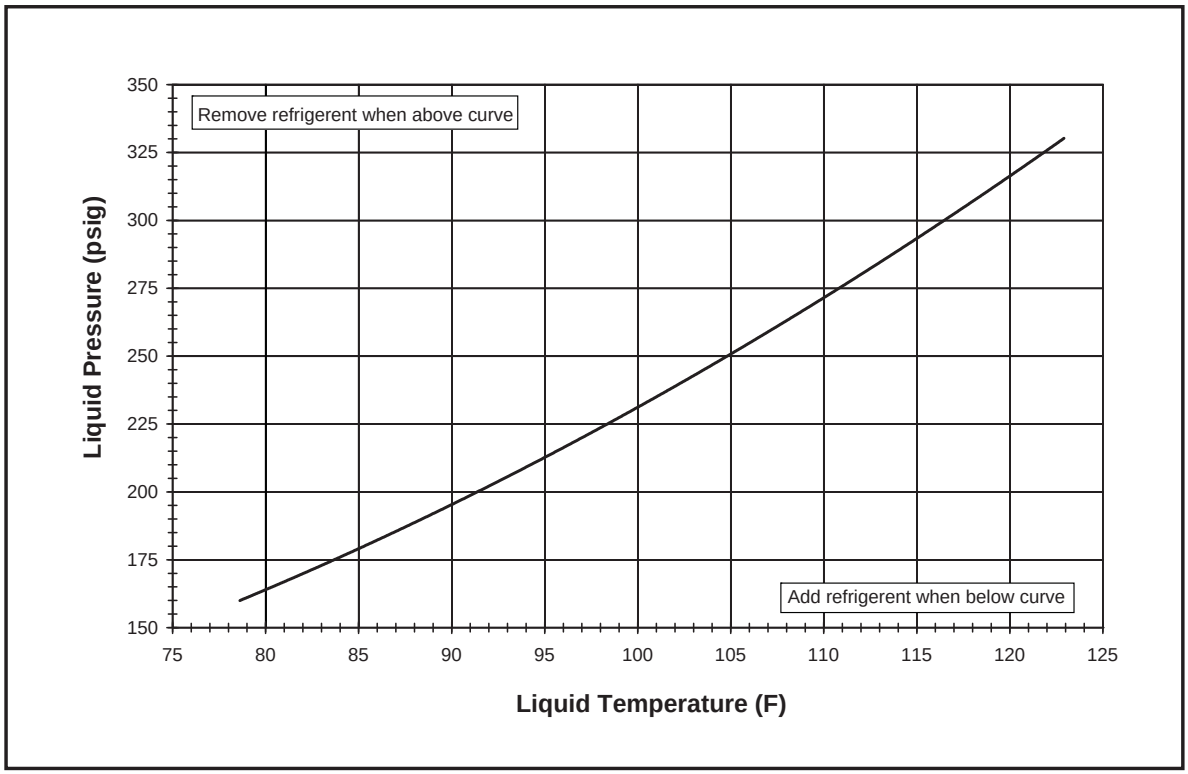


3.0 Ton HP TXV Charging Chart

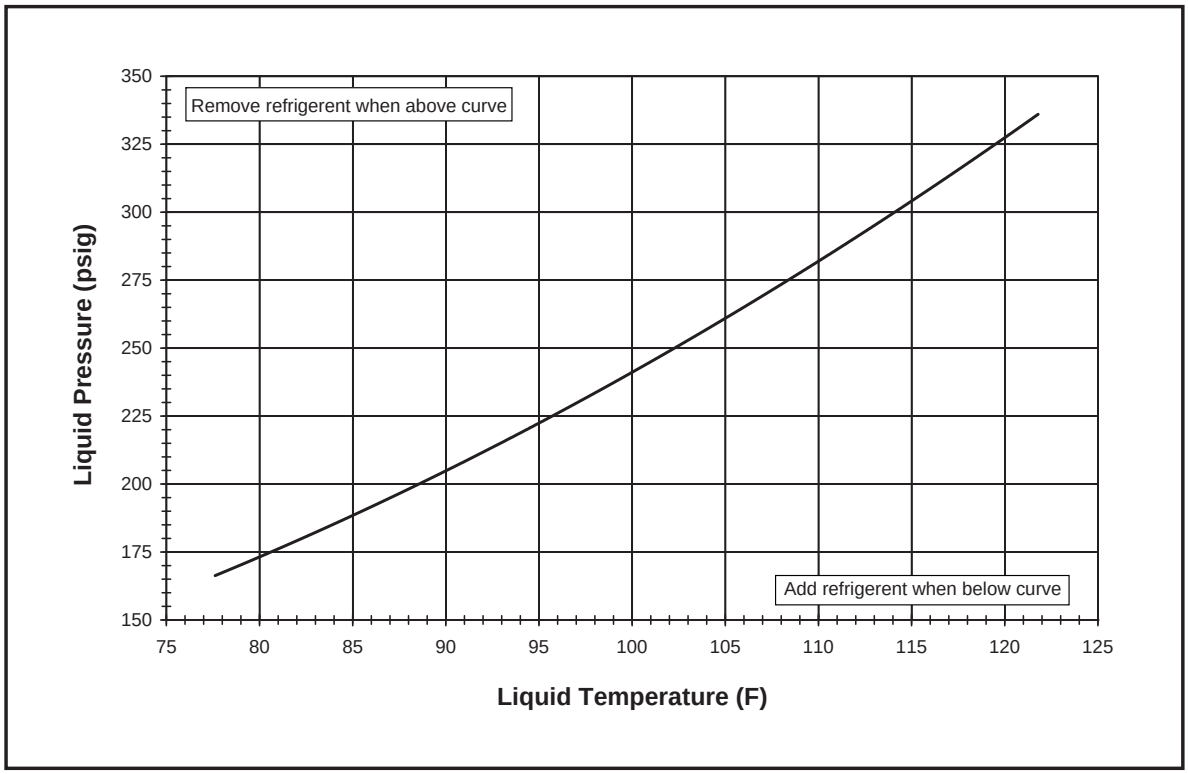


TXV Refrigerant Charging Chart

3.5 Ton HP TXV Charging Chart

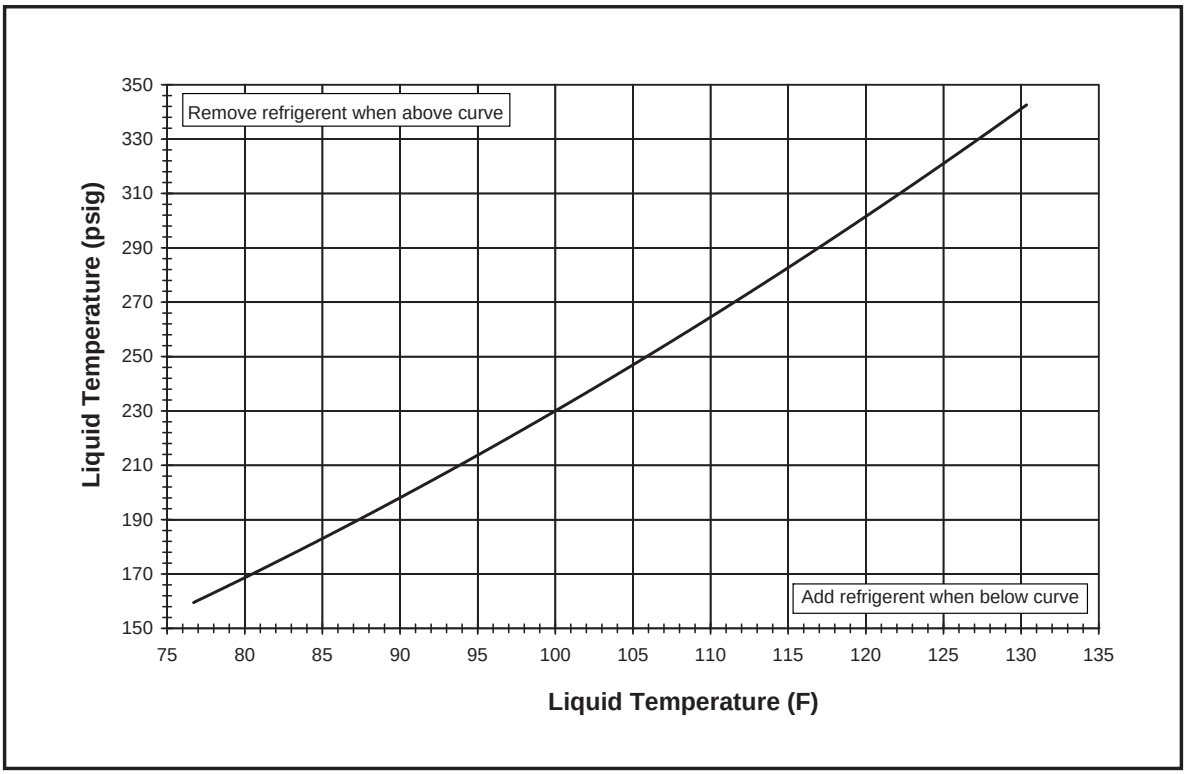


4.0 Ton HP TXV Charging Chart



TXV Refrigerant Charging Chart

5.0 Ton HP TXV Charging Chart



Refrigerant Charging Charts for Heating Mode of Operation
13 SEER Split System Heating Charts

1.5 TON	OUTDOOR TEMPERATURE (DEG. F)																			
	0			10			20			30			40			50			60		
Suc. Press	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.
12	116	109	22	134	120	31	152	131	40	170	143	48	174	157	56	188	173	64	203	190
13	123	107	23	140	118	32	157	129	41	174	141	49	181	154	57	195	169	65	210	184
14	130	105	24	146	116	33	162	127	42	177	139	50	188	151	58	202	164	66	217	178
15	137	103	25	152	114	34	166	125	43	181	137	51	195	148	59	209	160	67	224	172
16	144	101	26	158	112	35	171	123	44	185	135	52	202	146	60	216	155	68	231	165
17	151	99	27	164	110	36	176	121	45	188	133	53	209	143	61	223	151	69	238	159
18	158	97	28	170	108	37	181	119	46	192	131	54	216	140	62	230	146	70	245	153

2.0 TON	OUTDOOR TEMPERATURE (DEG. F)																			
	0			10			20			30			40			50			60		
Suc. Press	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.
13	121	124	22	138	132	30	154	140	39	171	148	46	175	161	54	188	181	61	201	200
14	128	122	23	143	130	31	159	138	40	175	146	47	182	159	55	195	176	62	208	194
15	135	120	24	149	128	32	164	136	41	179	144	48	189	156	56	202	172	63	215	188
16	142	118	25	155	126	33	169	134	42	182	142	49	196	153	57	209	167	64	222	182
17	149	116	26	161	124	34	174	132	43	186	140	50	203	150	58	216	163	65	229	176
18	156	114	27	167	122	35	178	130	44	190	138	51	210	147	59	223	158	66	236	170
19	163	112	28	173	120	36	183	128	45	193	136	52	217	144	60	230	154	67	243	163

Refrigerant Charging Charts for Heating Mode of Operation
13 SEER Split System Heating Charts

2.5 TON	OUTDOOR TEMPERATURE (DEG. F)																			
	0			10			20			30			40			50			60		
Suc. Press	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.
10	116	100	18	129	113	26	142	126	33	155	140	42	157	153	50	170	166	58	184	178
11	123	98	19	135	111	27	147	124	34	159	138	43	164	150	51	177	161	59	191	172
12	130	96	20	141	109	28	152	122	35	163	136	44	171	147	52	184	157	60	198	166
13	137	94	21	147	107	29	157	120	36	166	134	45	178	144	53	191	152	61	205	160
14	144	92	22	153	105	30	161	118	37	170	132	46	185	141	54	198	148	62	212	154
15	151	90	23	159	103	31	166	116	38	174	130	47	192	139	55	205	143	63	219	148
16	158	88	24	165	101	32	171	114	39	177	128	48	199	136	56	212	139	64	226	141

3.0 TON	OUTDOOR TEMPERATURE (DEG. F)																			
	0			10			20			30			40			50			60		
Suc. Press	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.
14	120	96	21	137	109	28	154	121	35	171	133	44	179	152	55	202	176	65	224	201
15	127	94	22	143	107	29	159	119	36	175	131	45	186	149	56	209	172	66	231	195
16	134	92	23	149	105	30	164	117	37	178	129	46	193	146	57	216	167	67	238	189
17	141	90	24	155	103	31	169	115	38	182	127	47	200	143	58	223	163	68	245	183
18	148	88	25	161	101	32	173	113	39	186	125	48	207	140	59	230	158	69	252	177
19	155	86	26	167	99	33	178	111	40	190	123	49	214	137	60	237	154	70	259	171
20	162	84	27	173	97	34	183	109	41	193	121	50	221	135	61	244	149	71	266	164

Refrigerant Charging Charts for Heating Mode of Operation
13 SEER Split System Heating Charts

3.5 TON	OUTDOOR TEMPERATURE (DEG. F)																			
	0			10			20			30			40			50			60		
Suc. Press	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.
14	120	101	21	136	113	28	152	124	36	168	135	44	176	156	55	198	188	65	220	220
15	127	99	22	142	111	29	157	122	37	172	133	45	183	154	56	205	184	66	227	214
16	134	97	23	148	109	30	162	120	38	176	131	46	190	151	57	212	179	67	234	208
17	141	95	24	154	107	31	167	118	39	179	129	47	197	148	58	219	175	68	241	202
18	148	93	25	160	105	32	171	116	40	183	127	48	204	145	59	226	170	69	248	196
19	155	91	26	166	103	33	176	114	41	187	125	49	211	142	60	233	166	70	255	190
20	162	89	27	171	101	34	181	112	42	190	123	50	218	139	61	240	161	71	262	184

4.0 TON	OUTDOOR TEMPERATURE (DEG. F)																			
	0			10			20			30			40			50			60		
Suc. Press	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.
12	109	77	21	134	95	30	159	113	38	184	131	47	198	153	56	224	180	65	250	208
13	116	75	22	140	93	31	164	111	39	188	129	48	205	150	57	231	176	66	257	202
14	123	73	23	146	91	32	169	109	40	191	127	49	212	148	58	238	171	67	264	195
15	130	71	24	152	89	33	173	107	41	195	125	50	219	145	59	245	167	68	271	189
16	137	69	25	158	87	34	178	105	42	199	123	51	226	142	60	252	162	69	278	183
17	144	67	26	163	85	35	183	103	43	202	121	52	233	139	61	259	158	70	285	177
18	151	65	27	169	83	36	188	101	44	206	119	53	240	136	62	266	153	71	292	171

Refrigerant Charging Charts for Heating Mode of Operation
13 SEER Split System Heating Charts

5 TON	OUTDOOR TEMPERATURE (DEG. F)																			
	0		10			20			30			40			50			60		
Suc. Press	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.	Suc. Press.	Liquid Press.	Disch. Temp.
13	121	124	20	142	132	27	164	140	34	185	148	43	201	166	54	233	193	66	266	219
14	128	122	21	148	130	28	169	138	35	189	146	44	208	163	55	240	188	67	273	213
15	135	120	22	154	128	29	173	136	36	193	144	45	215	160	56	247	184	68	280	207
16	142	118	23	160	126	30	178	134	37	196	142	46	222	157	57	254	179	69	287	201
17	149	116	24	166	124	31	183	132	38	200	140	47	229	154	58	261	175	70	294	195
18	156	114	25	172	122	32	188	130	39	204	138	48	236	151	59	268	170	71	301	189
19	163	112	26	178	120	33	193	128	40	207	136	49	243	149	60	275	166	72	308	183

INSTALLER: PLEASE LEAVE THESE INSTALLATION INSTRUCTIONS WITH THE HOMEOWNER.

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