Outdoor Air Conditioner

User's Information and Installation Instructions

12 SEER Extra 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 .

OPERATING INSTRUCTIONS

To Operate Your Air Conditioner for Cooling —

1. Set the thermostat system switch to COOL or AUTO and the thermostat fan switch to AUTO. (See Figure 1)
2. Set the thermostat temperature to the desired temperature level by pressing the WARMER or COOLER button. 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.

To Operate Your Furnace for Heating —

1. Set the thermostat system switch to HEAT or AUTO and the thermostat fan switch to AUTO. (See Figure 1)
2. Set the thermostat temperature to the desired temperature level by pressing the WARMER or COOLER button. Please refer to the separate detailed user's manual for complete thermostat programming instructions. The furnace and indoor blower will cycle on and off to maintain the indoor temperature at the desired heating level.

To Shut Off Your Air Conditioner —

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 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.

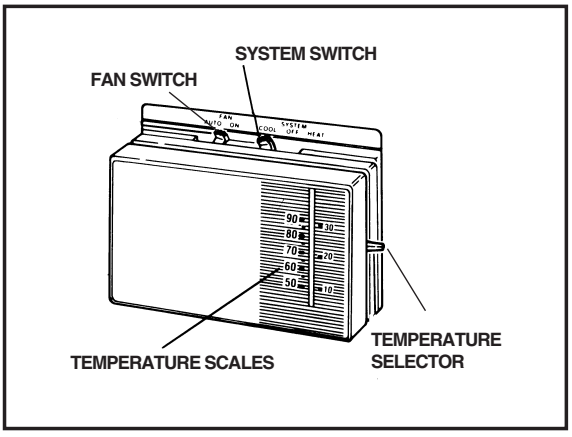

Figure 1. Typical Thermostat

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 Air Conditioner —

⚠ 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.

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.

2. Before Each Cooling Season:

If the furnace/air handler blower motor and the outdoor unit fan motor(s) have oil tubes at the motor bearings, apply 10 drops of SAE No. 20 motor oil to each oil tube.

⚠ CAUTION:

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

3. Before Calling a Service Technician, Be Certain:

a. The unit thermostat is properly set — see "To Operate Your Air Conditioner for Cooling" and "To Operate Your Furnace for Heating."

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

1. GENERAL INFORMATION

Read the following instructions completely before performing the installation.

Condensing Unit Section — Each condensing unit is shipped with a refrigerant charge adequate to operate the outdoor section with an indoor matching coil or air handler, and 15 feet of refrigeration line.

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

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

Liquid and Suction Lines — 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 C1.) 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.

2. SAFETY CONSIDERATIONS

Pressures within the System — Split system air conditioning 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.

3. SITE PREPARATION

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

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.

4. 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.

5. 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.

6. 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.

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

7. MAKING 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 C1.) and with applicable local codes having jurisdiction.

Thermostat Connections — Thermostat connections should be made in accordance with the instructions supplied with the thermostat, and with the instructions supplied with the indoor equipment.

Electrical Power Wiring — Electrical power wiring shall comply with the current provisions of the "National Electrical Code" (ANSI C1.) 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.

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 C1.), 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.

8. 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 move temperature setpoint to its highest setting. 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.

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.

Heating — If provided with heating equipment, 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. Increase the setpoint temperature of the thermostat to the maximum setting. Verify that the heating equipment has been energized (i.e., fossil fuel burner operating, etc.) and that the indoor blower energizes after a short period of time. 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 heat pump should be functionally checked to verify system operation and compatibility with the heat pump. Refer to the installation instructions for this equipment and perform a functional checkout in accordance with the manufacturer's instructions.

Adjustment of Refrigerant Charge:

⚠ CAUTION:

Split system air conditioner 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 matched assemblies of our 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.

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

Orifice Usage
12 SEER Split System Air Conditioner

Model Number	Restrictor Size (In.)	System Charge R-22 oz.
1-1/2 Ton	0.055	61
2 Ton	0.060	63
2-1/2 Ton	0.065	68
3 Ton	0.075	82
3-1/2 Ton	0.077	102
4 Ton	0.082	110
5 Ton (Coil only)	0.093	155
5 Ton (Air handler)	0.099	155

Refrigerant Charging Charts Legend For Cooling Mode of Operation

* Note: All pressures are listed in psig. and all temperatures in degrees F.

- Shaded Boxes indicate flooded conditions

- Rated Design Values. Suction Pressure will be lower than design value if indoor air flow, entering dry bulb, or entering wet bulb temperatures are lower than design.

Refrigerant Charging Charts For Cooling Mode of Operation

1-1/2 TON	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
Suction Press.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.
72	170	135														
74	172	141	186	140												
76	174	146	188	145	202	145										
78	177	150	190	150	204	149	219	149								
80	180	153	193	154	207	154	221	154	235	154						
82			197	157	210	158	223	158	237	158	251	158				
84					213	162	226	162	239	162	253	162	268	162		
86							229	166	242	166	255	167	270	166	284	167
88							233	170	246	170	259	171	272	170	286	171
90									249	174	262	175	275	175	288	174
92											266	179	279	179	292	179
94													282	183	295	183
96															298	188
98																

Refrigerant Charging Charts
For Cooling Mode of Operation

2 TON	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
Suction Press.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.
70	159	130														
72	161	135	176	136												
74	163	141	178	141	193	142										
76	164	148	180	146	195	147	210	148								
78	168	151	182	152	197	152	212	153	227	154						
80			185	155	199	157	214	157	229	158	244	160				
82					203	160	217	162	231	163	246	164	261	165		
84							220	165	234	167	248	168	263	169	278	170
86							223	169	237	171	251	172	265	173	280	174
88									241	175	255	176	269	177	282	178
90											258	180	272	182	286	183
92													276	186	289	187
94															293	192
96																

Refrigerant Charging Charts
For Cooling Mode of Operation

2-1/2 TON	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
Suction Press.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.
68	147	129														
70	149	134	164	135												
72	151	139	166	140	181	142										
74	153	145	169	145	184	146	199	148								
76	157	148	171	150	186	151	201	152	216	154						
78			174	154	188	156	203	157	218	158	233	160				
80					192	159	206	161	220	163	235	164	251	166		
82							209	165	223	167	237	168	253	170	268	171
84							213	168	227	170	241	172	255	174	270	175
86									230	174	244	176	258	178	272	179
88											248	180	262	182	276	184
90													265	186	279	188
92															283	193
94																

Refrigerant Charging Charts
For Cooling Mode of Operation

3 TON	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
Suction Press.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.
69	156	129														
71	158	135	173	135												
73	160	140	175	140	190	141										
75	162	146	177	145	192	146	207	147								
77	166	149	179	151	194	151	209	152	224	153						
79			183	154	196	155	211	156	226	157	240	158				
81					200	159	214	160	228	161	242	162	257	163		
83							217	164	231	165	245	166	259	167	274	169
85							221	168	234	169	248	170	261	171	276	172
87									238	173	251	175	265	176	278	176
89											255	179	269	180	282	181
91													272	184	286	185
93															289	190
95																

Refrigerant Charging Charts
For Cooling Mode of Operation

3-1/2 TON	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
Suction Press.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.
66	152	138														
68	154	143	168	142												
70	156	148	170	147	184	146										
72	159	153	172	152	186	151	200	150								
74	162	155	175	156	188	156	202	155	215	154						
76			178	159	191	160	204	159	218	158	231	158				
78					194	163	207	163	220	163	233	162	247	162		
80							210	167	223	167	236	166	249	166	263	166
82							214	170	226	171	239	170	251	170	265	169
84									230	174	242	174	255	174	267	173
86											246	179	258	178	271	178
88													262	183	274	182
90															278	187
92																

Refrigerant Charging Charts
For Cooling Mode of Operation

4 TON	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
Suct. Press.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.
67	155	142														
69	158	147	171	146												
71	160	153	173	151	187	150										
73	161	159	176	156	189	155	203	154								
75	165	162	178	162	191	160	205	159	218	158						
77			181	165	194	165	207	164	220	163	234	162				
79					197	168	210	168	223	167	236	166	250	166		
81							213	171	226	171	238	171	252	170	265	169
83							217	175	229	175	242	175	254	174	267	173
85									233	179	245	179	258	178	269	177
87											248	183	261	182	274	182
89													264	187	277	186
91															280	191
93																

Refrigerant Charging Charts
For Cooling Mode of Operation

5 TON	OUTDOOR TEMPERATURE (°F)																					
	70		75		80		85		90		95		100		105							
Suct. Press.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.	Dis. Press.	Dis. Temp.						
64	151	149																				
66	153	154	170	153																		
68	156	159	172	158	189	156																
70	159	163	174	163	191	161	208	160														
72	162	166	177	166	193	166	210	164	227	163												
74			181	169	196	169	212	169	229	167	246	166										
76					200	173	215	173	231	172	248	171	264	170								
78							219	176	234	176	250	175	266	174	283	173						
80							222	180	238	180	253	179	268	178	285	177						
82									241	183	256	183	272	182	287	181						
84											260	187	275	186	291	185						
86													279	190	294	190						
88															298	194						
90																						

INSTALLER: PLEASE LEAVE THESE INSTALLATION INSTRUCTIONS WITH THE HOMEOWNER

708201B

708201B (Replaces 708201A)