Outdoor Air Conditioner

User's Information and Installation Instructions

10 SEER Standard Efficiency Split System

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.

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

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 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.

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 using the temperature selector. 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.

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

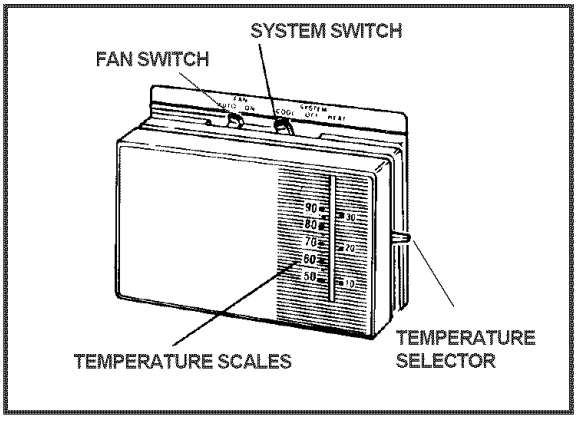

Figure 1. Typical Thermostat

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.

⚠ 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 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.

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.

Read Your Warranty

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

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.

Liquid and Suction Lines — Refrigerant grade copper tubing should be used when installing the system. Refrigerant suction line tubing should be fully insulated to prevent condensate damage.

Field Connections for Electrical Power Supply — All wiring must comply with the current provisions of the "National Electrical Code" (ANSI C1.) and with applicable local codes having jurisdiction. Size of electrical conductors and circuit protection must be in compliance with the 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 without proper supervision from trained and qualified service personnel.

⚠ 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.

Labels, Tags, Precautions — When working with this equipment, follow all precautions in 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.

3. SITE PREPARATION

Unpacking Equipment — Remove the cardboard carton and Literature Package from the equipment.

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 must be installed in such a manner that airflow through the coil is not obstructed and that the unit can be serviced.

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.

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 the mount is subjected to 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 lines should be routed through suitably waterproofed openings to prevent water leaking into the structure.

5. INSTALLING THE INDOOR UNIT

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

6. CONNECTING REFRIGERANT TUBING BETWEEN THE INDOOR AND OUTDOOR UNIT

General Information — Once the outdoor and indoor unit placement has been determined, route the 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 (i.e.: filter/driers, liquid line solenoid valves, etc.) should be installed in strict accordance with the manufacturer's Installation Instructions.

For refrigerant line sets that incorporate single shot couplings only:

1. Remove protective caps from the unit and the refrigerant line couplings
2. Carefully wipe all coupling threads and seals with a clean cloth to remove any dust or foreign material which could contaminate the refrigerant system.
3. Using refrigerant oil, lightly lubricate the diaphragm, seal and threads on the male unit coupling.
4. Connect couplings as follows:
   a. HOLD REFRIGERANT LINE IN STRAIGHT POSITION TO UNIT COUPLING AND THREAD COUPLING HALVES TOGETHER BY HAND TO INSURE PROPER CONNECTION. Hold body of the line coupling hex, with wrench, while slowly tightening the union nut until a definite resistance (bottoming out) is felt.
   b. Mark the position of union nut (match lines on the line coupling and the unit bulk head), and then tighten the coupling an additional 1/4 turn to insure leak-proof connection. (See Table of Torque Values for recommended torque values if a torque wrench is used.)

TABLE OF TORQUE VALUES

Coupling Size	Torque
3/8" (10 mm) Liquid Line Coupling	10 - 12 ft. lbs. (Metric: 14-16 N-m)
3/4" (19 mm) or 7/8" (22 mm) Vapor Line Coupling	34-45 ft. lbs. (Metric: 47-61 N-m)
Service Valve Cap	5-6 ft. lbs. (Metric: 7-8 N-m)

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 personal 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 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 Wiring — Electrical wiring must 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 a 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 shall 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 (i.e., 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. START-UP 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 the temperature set-point to it's highest setting.

Prior to applying electrical power to the outdoor unit, ensure that the unit has been properly and securely grounded.

Prior to applying electricity to the outdoor unit, ensure power supply connections have been made at the facility power interface and at the 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.

Functional Checkout:

⚠ CAUTION:

If equipped with a refrigerant compressor crankcase heater, allow 24 hours prior to performing a function checkout to allow for heating of the refrigerant 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 or MAN. 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 set-point 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 (select models) — With the system operating in "Cooling" mode, note the temperature setting of the thermostat, and gradually raise the set-point temperature until the outdoor unit and indoor blower de-energize. Immediately lower the set-point temperature of the thermostat to it's 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 — If provided with heating equipment, lower the thermostat 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 set-point 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.

Adjustment of Refrigerant Charge:

⚠ WARNING:

Split System Air Conditioning 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 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 specific accordance with the checkout procedures supplied with the equipment.

10 SEER SPLIT SYSTEM AIR CONDITIONER ORIFICE USAGE

MODEL NUMBER SINGLE PHASE	RESTRICTOR SIZE (IN.)	SYSTEM CHARGE R-22 (OZ.)
1-1/2 Ton	0.051	63
2 Ton	0.060	64
2-1/2 Ton	0.063	68
3 Ton	0.067	69
3-1/2 Ton	0.075	87
4 Ton	0.080	102
5 Ton	0.093	114
THREE PHASE		
3 Ton	0.067	69
4 Ton	0.080	102
5 Ton	0.092	114

REFRIGERANT CHARGING CHARTS FOR COOLING MODE OF OPERATION

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

— Discharge temperatures greater than charted values indicate a refrigerant undercharge.

— 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.

S.P. = Suction Pressure L.P. = Liquid Pressure D.T. = Discharge Temperature

1-1/2	OUTDOOR TEMPERATURE (°F)															
TON	70		75		80		85		90		95		100		105	
S.P.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.
71	178	151														
73	180	156	193	154												
75	182	161	195	159	208	157										
77	184	164	197	163	210	162	223	160								
79	187	168	200	167	213	166	226	165	238	163						
81			202	171	215	170	228	169	241	168	253	166				
83					218	174	231	173	244	172	256	171	268	169		
85							234	177	247	176	259	175	272	173	284	172
87							237	181	250	180	262	179	275	178	287	176
89									252	184	265	183	278	182	291	181
91											268	187	281	186	294	185
93													284	190	297	189
95															300	193
97																

REFRIGERANT CHARGING CHARTS FOR COOLING MODE OF OPERATION - Continued

2 TON	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
S.P.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.
69	192	160														
71	194	165	208	163												
73	196	170	210	167	224	166										
75	198	173	212	172	227	170	240	168								
77	201	176	215	176	229	175	243	173	256	171						
79			218	179	232	179	245	178	259	176	273	174				
81					234	182	248	182	262	180	276	179	289	177		
83							251	185	265	184	279	183	292	182	305	180
85							254	189	268	188	282	187	295	186	308	184
87									271	192	285	191	298	190	312	189
89											287	195	301	194	315	193
91													304	198	318	197
93															321	201
95																

2-1/2 TON	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
S.P.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.
67	193	159														
69	194	164	209	162												
71	196	168	211	167	225	166										
73	198	173	213	172	228	171	242	170								
75	201	176	215	176	230	176	244	174	258	173						
77			218	180	232	180	247	179	261	178	275	177				
79					235	183	250	183	264	182	278	181	292	180		
81							252	187	267	186	281	186	295	185	309	184
83							255	191	270	190	284	190	299	189	312	188
85									273	194	287	194	301	193	316	193
87											290	198	304	197	319	197
89													307	201	322	201
91															325	205
93																

3 TON	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
S.P.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.
67	198	166														
69	200	171	214	170												
71	201	176	216	174	231	173										
73	204	180	218	179	233	178	247	176								
75	206	183	221	183	235	182	249	181	263	179						
77			223	186	238	186	252	185	266	184	280	183				
79					241	190	255	189	269	188	283	187	296	186		
81							258	193	272	192	286	192	300	190	313	189
83							260	197	275	196	289	196	303	195	316	193
85									278	200	292	200	306	199	320	198
87											295	204	309	203	323	202
89													312	207	326	206
91															329	210
93																

REFRIGERANT CHARGING CHARTS FOR COOLING MODE OF OPERATION - Continued

3-1/2 TON	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
S.P.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.
66	190	160														
68	192	165	205	163												
70	193	169	207	168	220	166										
72	194	175	209	173	223	171	236	169								
74	197	179	211	178	225	176	238	174	252	172						
76			214	181	227	180	241	179	255	177	268	175				
78					230	184	244	183	257	182	271	180	284	178		
80							247	187	260	186	274	184	287	183	300	181
82							249	190	263	190	277	188	290	187	304	186
84									266	193	280	192	293	191	307	190
86											283	196	296	195	310	194
88													299	199	313	198
90															316	202
92																

4 TON	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
S.P.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.
65	192	143														
67	194	148	208	149												
69	195	153	210	154	225	155										
71	195	161	212	158	228	159	243	160								
73	198	164	213	165	230	164	245	165	261	166						
75			216	168	232	169	248	170	263	170	279	171				
77					235	173	250	174	266	175	282	176	297	177		
79							253	178	269	179	285	180	300	181	316	182
81							256	182	272	183	288	184	304	185	319	186
83									275	187	291	188	306	189	323	191
85											294	192	309	193	325	195
87													312	198	328	199
89															331	203
91																

5 TON	OUTDOOR TEMPERATURE (°F)															
	70		75		80		85		90		95		100		105	
S.P.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.	L.P.	D.T.
59	175	150														
61	177	155	193	156												
63	179	160	195	161	211	162										
65	180	169	198	166	214	167	230	168								
67	183	172	199	173	216	171	232	172	248	173						
69			202	176	217	177	234	177	250	177	266	178				
71					221	180	236	181	252	182	268	183	284	184		
73							240	185	255	186	270	187	286	188	302	188
75							243	189	258	190	274	191	288	192	304	192
77									262	194	277	195	292	196	306	196
79											280	199	296	200	311	201
81													299	204	314	206
83															318	210
85																

INSTALLER: PLEASE LEAVE THESE INSTALLATION INSTRUCTIONS WITH THE HOMEOWNER.

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