

# SU SERIES UPFLOW PACKAGED TERMINAL AIR CONDITIONERS

Heating and Cooling Unit  
Cooling - Only Unit

## INSTALLATION & OPERATION MANUAL

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Effective February 1985 (Revision Date: April 2009)  
This manual supersedes all previous issues.



801263 REV. 01 APR 2009

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## **WARNING: SAFETY HAZARD**

THE SU SERIES UNITS MUST NOT BE USED FOR DUCTED APPLICATIONS.

DUCTED APPLICATIONS REQUIRE THE SDA SERIES, WHICH IS A SPECIALLY CONFIGURED UNIT, SIMILAR IN APPEARANCE, BUT INCORPORATES THE SAFETY FEATURES REQUIRED FOR DUCTED APPLICATIONS.

FAILURE TO HEED THIS WARNING COULD RESULT IN PROPERTY DAMAGE, PERSONAL INJURY OR DEATH.

# COMPONENTS

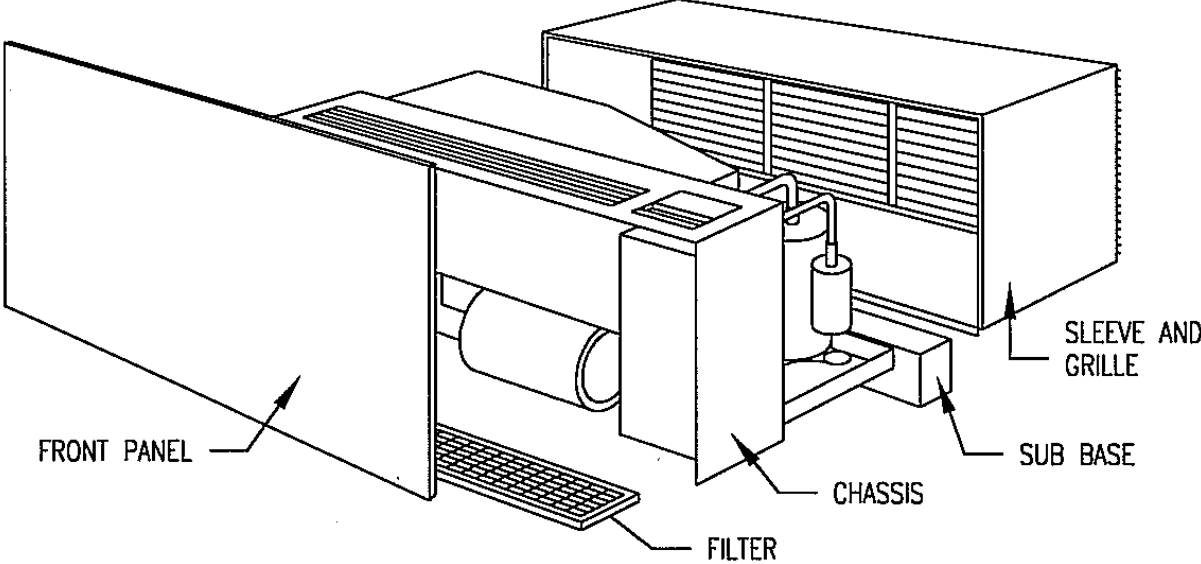


Fig.1

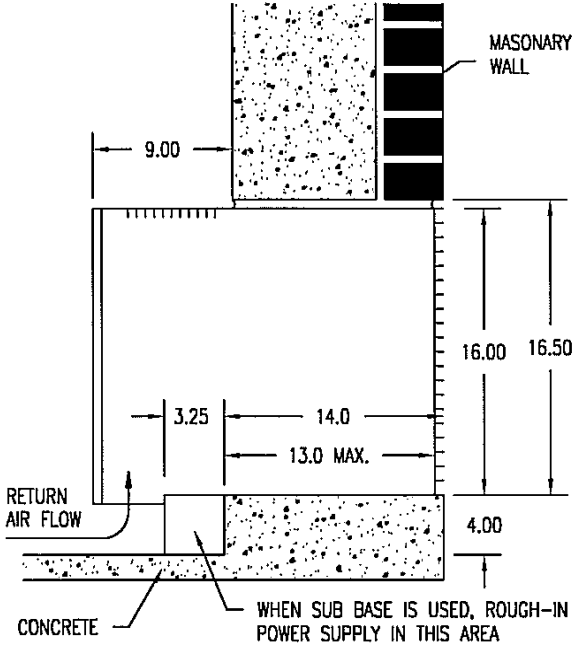


Fig. 2

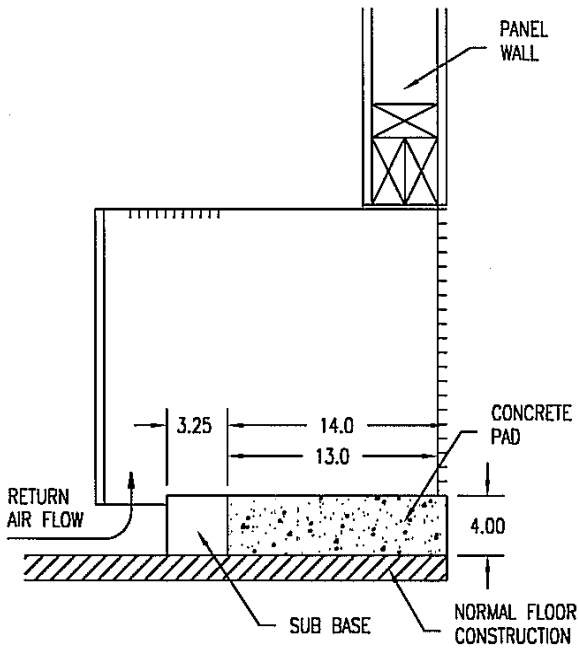


Fig. 3

## Wall Sleeve and Outdoor Grille

The wall sleeve is to be built into the wall during construction. The wall sleeve is used for all wall thicknesses from 2" through 14" maximum. For a 14" deep wall the outdoor louvers will have to be mounted flush with the outside wall surface. For walls thicker than 14", a cabinet extension is required. For installation of wall sleeve extensions, see instructions packed with the extensions.

After installation of the wall sleeve, the sleeve should be thoroughly cleaned. The room-side portion of the cabinet should be carefully protected during the construction period to prevent scratching of the paint.

### **IMPORTANT!**

The heating/cooling unit must not be used for temporary heating or cooling during the building's construction stage.

## Heating/Cooling Chassis

This chassis includes all cooling components, air moving components and controls, except for the 24-volt room thermostat (if applicable).

## Power Supply Cord and Plug

A power supply cord with a 30 Amp 250 Volt male plug extends from the left side of the control section located on the right hand side of the unit. This cord is to be attached to a field-furnished receptacle mounted in the factory-provided junction box mounted in the sub base under the unit. The sub base is sized to fill the gap between the finished floor and the room cabinet when the wall sleeve is installed 4" above the finished floor as shown in Figures 2, and 3.

# INSTALLATION

## Installation of the Wall Sleeve and Outdoor Grille

1. The wall sleeve may be positioned in the wall to suit the application subject to the limitations that:
  - The finished inside wall must be behind the outlet grille. (9" minimum from the front of the cabinet). See Figure 2.
  - The outdoor louver must be flush or extending beyond the outside wall (no recess). Use a wall sleeve extension if necessary. See Figures 2, and 3.
  - The wall sleeve must be rigidly installed in the wall. There are some installations where it may be necessary to anchor the top and sides of the wall sleeve to the wall using appropriate fasteners for the type of construction.
2. For best results, the rear 13" of the cabinet should be supported by concrete, regardless of wall construction. The inside edge of the cabinet must be 4" above the finished floor to allow adequate space for air flow to the unit and to ensure proper fill by the sub base. See Figures 2, and 3.

3. The wall sleeve will not support the wall above it. Provide necessary lintels to prevent distortion of the cabinet.

**IMPORTANT:** The wall sleeve must possess an overall  $\frac{1}{4}$ " slope downward toward the outside to ensure proper water drainage. The wall sleeve must also be level from side-to-side.

**Failure to do so may cause property damage by water running into the conditioned space.**

4. The wall sleeve will be set in wet concrete or mortar and pressed firmly into place to get contact between the concrete and the bottom.
5. All cracks or openings between the cabinet and the wall must be filled with mortar and/or caulked.
6. Receptacle mounting, installation of the junction box, and rough wiring must be completed at the time of wall sleeve installation. Electrical entrance must be between the concrete, wall sleeve, and sub base. Detailed instructions follow.

#### A. New Masonry Wall

1. From the architect's drawings, determine the position of each unit and mark the centerline of the cabinet/wall sleeve. Also, mark the location of the high voltage receptacle enclosure and the area of entrance for the low voltage wiring. Low voltage wiring exits through the left side of the cord recess located in the front face of the sub base.
2. Run wiring to location for each unit, as established in step 1.
3. Completely finish all concrete work associated with floor and wall. See Figure 2.
4. Provide 13" wide concrete mounting under unit.
5. Install high voltage wiring/conduit into the junction box in the sub base. Leave at least 8" of free wire inside the conduit box to facilitate connections.
6. Pull the low voltage wiring (if applicable) out through the hole in the cord recess area in the sub base.
7. Set the cabinet/wall sleeve in  $\frac{3}{4}$ " wet concrete – it must be level from side to side, and sloped  $\frac{1}{4}$ " overall, toward the outside, for proper drainage. Press into place.
8. Attach the sub base to the sleeve using the three grounding screws **before the concrete sets**. Be sure that it will rest squarely on the finished floor.
9. Ensure cabinet/wall sleeve is not distorted during installation and is adequately protected during the construction period.
10. Build up wall around cabinet, making sure that the cracks are closed and that the cabinet remains square, especially on the top.

#### B. Existing Masonry Wall

Cut opening into wall, providing a minimum of  $\frac{1}{2}$ " clearance on sides and top and 1" on the bottom, to pour new base (13" wide).

Follow steps 4 through 10 in "New Masonry Wall".

### C. New Panel Wall

Provide 13” wide concrete pad under unit.  
Follow steps 4 through 10 in “New Masonry Wall”.

### D. Existing Panel Wall

Cut Opening in existing wall slightly larger than cabinet/wall sleeve. Be sure to locate at least 4” above finished floor.  
Follow steps 4 through 10 in “New Masonry Wall”.

## Installation of Power and Control Wiring

### Remote Thermostat or Unit Mounted Controls

1. Connect power supply for the unit to the correct terminals of the receptacle.
2. Install wired receptacle into conduit enclosure. Install receptacle cover plate provided with the sub base.

### Remote Thermostat Models Only

For units equipped for remote thermostat operation, a six-position low voltage connector plug with 24” leads is provided for 24 volt Class II wiring connections. The connector plugs into a mating receptacle in the side of the chassis control box that can be unplugged to facilitate removal of the chassis for servicing. Connections between the 24” leads and thermostat wiring can be made outside the sub base enclosure and in accordance with the specific wiring diagram affixed to the chassis. The thermostat wire connections can be stuffed back through the hole in the sub base.

**CAUTION:** One side of the unit’s 24-volt control system is grounded. When wiring thermostat, care must be taken not to ground the red wire, thereby potentially burning out the transformer.

## Chassis Installation

1. Check all air seals in the cabinet.
2. After all construction is complete and the unit location is thoroughly cleaned, the heat cool chassis is ready for installation in the cabinet/wall sleeve.
3. Unpack heat/cool chassis from shipping carton. Check for any shipping damage.
4. Position the chassis in the cabinet and slide into place. Keep the chassis level and square to prevent binding. The chassis must be pushed into the cabinet until the draw bolts in the chassis side panels can engage the threaded clip in the sleeve. Alternate turning the two draw bolts until the chassis is drawn snugly into the sleeve. Do not over - tighten the draw bolts.

### **NOTE:**

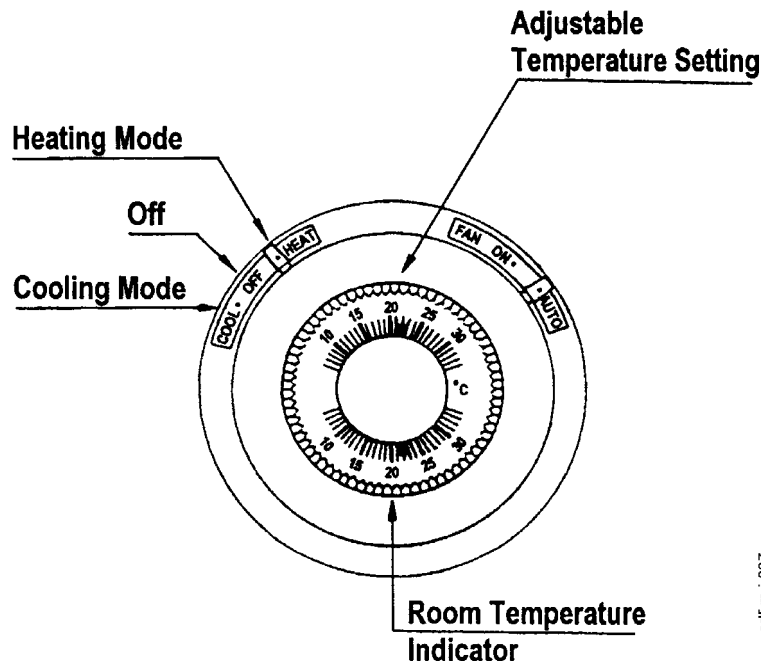
When handling the chassis, care must be taken to ensure that no damage occurs to the fan wheels. Damaged or unbalanced fans will cause excessive noise and will impair unit performance.

5. Connect low voltage wiring harness to the heat/cool chassis (if applicable).
6. Plug the heat/cool chassis cord into the power receptacle in the sub base.
7. Install the unit air filter into position.

**NOTE:** Ensure that the cord is pushed well into the cord recess of the sub base or the filter will not be able to be completely inserted.

8. Install front panel.
9. Wipe unit cabinet/wall sleeve to remove dirt, etc.
10. The unit is now ready for operation, when supplied with power from the distribution panel and wired to a remote thermostat (if applicable).

## OPERATING INSTRUCTIONS



The Unitary Package Heating, Cooling Unit has been carefully designed and built to provide reliable operating performance when installed and maintained correctly.

### Control System Description

#### 24 Volt Remote Thermostat Models

1. The unit is controlled on both heating and cooling by a low voltage wall mounted thermostat.
2. Any standard 24-volt heat/cool thermostat intended to control a gas-heating unit with cooling can be made to work with the unit.
3. A room thermostat is basically a switch used to direct 24 volt power from the "R" terminal to its W, Y, and G terminals, according to the function being demanded by the user. Sometimes an electronic thermostat needs to be powered with 24 volts via connection to an additional "C" or

“Common” terminal, typically if its display is backlit. If the thermostat demands that the “C” connection be made at the thermostat wiring terminals, then please order the additional black lead that will insert into the unit’s low voltage connector, Part No. 18BK23Y-024.

4. Heating and cooling will be cycled on, as dictated by the setting of the wall thermostat. In this mode, the room-side fan will run at factory-predetermined speeds for heating and cooling.

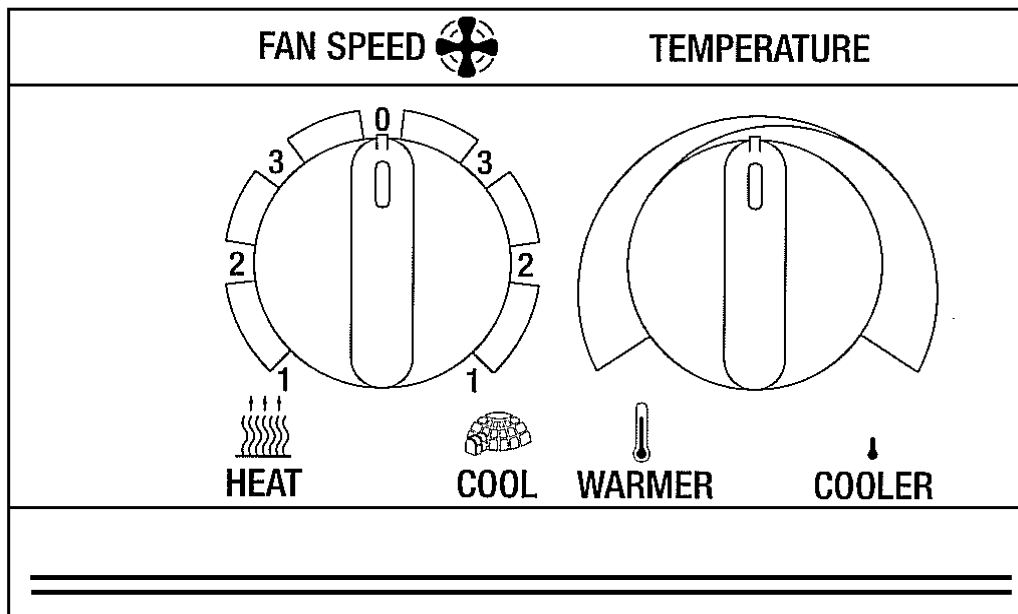
**IMPORTANT: The factory-set indoor fan speeds must not be changed. Fan speeds are carefully interlocked to protect the indoor motor windings from simultaneous energization.**

5. The indoor fan will be off when neither heating nor cooling are required, if the fan switch on the thermostat is set to “AUTO”. If the fan switch is set to “ON” the indoor fan will circulate air continuously on low speed until there is a call for heating or cooling.
6. To get reasonable comfort and energy consumption, it is recommended that wall mounted thermostats be set at 21°C (70°F) for heating and 25°C (77°F) for cooling.

Over-adjusting the thermostat will not increase the rate at which a unit will heat or cool the space; it is merely an on-off switch that responds to temperature.

**ATTENTION:** Do not place the wall thermostat in locations where it cannot detect true room temperature, such as in direct sunlight or near air registers. Also beware of drafts flowing through the thermostat wiring hole.

### Unit - Mounted Controls





1. Room temperature is controlled on both heating and cooling by the temperature control knob.
  - Clockwise rotation decreases the temperature in the room.
  - Counter-clockwise rotation increases the temperature in the room.

Once a comfortable setting is selected, no other adjustments are necessary.

2. Move the "Temperature" dial a small amount at a time in the direction that you wish the temperature to go. Moving the dial more than ½ inch at a time may over-compensate and lead to an extreme hot or cold situation.
3. Fan speeds in heating and cooling operation are controlled by a fan speed knob. Move the "Fan Speed" dial to the right of "0" for cooling operation and to the left of "0" for heating operation.

Rotation of the knob changes fan speed as follows:

3 = High Fan Speed

2 = Medium Fan Speed

1 = Low Fan Speed

<p><b>ATTENTION:</b> When in cooling mode, if the compressor is shut off by either rotation of the "Temperature" dial or by rotation of the "Fan Speed" dial to "0", then wait 3 minutes before re-starting. The same applies for a power interruption.</p>
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4. Over-adjusting the thermostat will not increase the rate at which a unit will heat or cool the space; it is merely an on-off switch that responds to temperature.

## OPERATING PROCEDURES

### Suggested Operating Procedures

To obtain the maximum comfort from your packaged terminal heating and cooling unit, the following procedures are recommended.

1. Always draw drapes or blinds in the summer, to block out direct rays from the sun.
2. Keep windows and doors closed when operating unit on cooling.
3. Prior to operating unit on cooling, ensure filter is clean for maximum efficiency.
4. Check filters regularly. Filters have to be cleaned in accordance with the unit environment. Never operate unit with a dirty filter or without a filter.
5. Ensure that the air discharge and return air openings are not obstructed, causing a restricted air flow condition. **DO NOT PLACE ARTICLES ON DISCHARGE GRILLE.**
6. When adjusting the thermostat, be careful not to over control. A change in temperature of plus or minus 2 degrees can make the difference between comfort and discomfort. Set the control at the recommended comfort settings and allow the unit to operate at that setting. The unit will automatically maintain the comfort level by cycling on and off as required.

## If the Unit Doesn't Work

The unit has been carefully designed and tested and should provide trouble free operation when properly sized, correctly installed, intelligently operated and checked by a competent serviceman at least once a year. However, if you should experience difficulty, check the following before calling for services.

1. Ensure that controls are properly set.
2. Check to see if a fuse has blown or a breaker has tripped.
3. Check to see that the power plug is properly engaged.
4. If unit is calling for cooling, check to see if outside condenser fan is running.
5. Is cooling being demanded at a very low outdoor temperature? The unit is designed to discontinue cooling operation at low outdoor temperatures where air conditioning is not typically required.

If, after checking the above, your unit is still not operating, call in competent service personnel.

## PREVENTIVE MAINTENANCE

### **WARNING:**

**DISCONNECT POWER SUPPLY TO UNIT BEFORE REMOVING FRONT PANEL.**

### **Before Each Heating and Cooling Season:**

1. Remove front panel and disconnect control wiring.
2. Clean front surfaces with vacuum cleaner and damp cloth.
3. Loosen the draw bolts that are affixed to the chassis side panels.
4. Pull the chassis out of the sleeve, and set on a stable surface.
5. Remove condenser cover and clean the condenser with a bristle brush and vacuum cleaner.
6. With condenser cover removed, reach down into the primary drain pan, at the bottom of the coil, and clean the pan, as well as the condensate drain tube. Be sure the tube is clear.
7. Clean fan wheels with a soft brush. Caution must be used to avoid bending blades.
8. The motors are permanently lubricated and need no re-oiling.
9. Inspect electrical wiring and repair if necessary.
10. Check all sealing gaskets and repair if necessary.
11. Reinstall heating/cooling chassis. Reinstall control wiring, if applicable. Reinstall grounding screws.
12. Replace front panel and reinsert plug.
13. Turn power on and test unit for proper heating and cooling.