# INSTALLATION INSTRUCTIONS
# Low−Ambient Pressure Switch
# NASA402LA

**These instructions must be read and understood completely before attempting installation.**

**Safety Considerations:**

Installing and servicing of air conditioning equipment can be hazardous due to system pressure and electrical components. Only trained personnel should install or service air conditioning equipment.

Untrained personnel can perform basic maintenance functions such as cleaning coils or cleaning and replacing filters. All other operations should be performed by trained service personnel. When working on air conditioning equipment observe precautions in the literature and on tags and labels attached to the unit.

Follow all safety codes. Wear safety glasses and work gloves. Use a quenching cloth for brazing operations. Have a fire extinguisher available.

## Safety Labeling and Signal Words

### DANGER, WARNING, CAUTION, and NOTE

The signal words **DANGER, WARNING, CAUTION,** and **NOTE** are used to identify levels of hazard seriousness. The signal word **DANGER** is only used on product labels to signify an immediate hazard. The signal words **WARNING, CAUTION,** and **NOTE** will be used on product labels and throughout this manual and other manuals that may apply to the product.

**DANGER** − Immediate hazards which **will** result in severe personal injury or death.

**WARNING** − Hazards or unsafe practices which **could** result in severe personal injury or death.

**CAUTION** − Hazards or unsafe practices which **may** result in minor personal injury or product or property damage.

**NOTE** − Used to highlight suggestions which **will** result in enhanced installation, reliability, or operation.

**Signal Words in Manuals**

The signal word **WARNING** is used throughout this manual in the following manner:

**⚠ WARNING**

The signal word **CAUTION** is used throughout this manual in the following manner:

**⚠ CAUTION**

**Signal Words on Product Labeling**

Signal words are used in combination with colors and/or pictures on product labels.

**⚠ WARNING**

**ELECTRICAL SHOCK HAZARD**

**Failure to turn off electric power could result in personal injury or death.**

**Before installing or servicing system, turn off main power to the system. There may be more than one disconnect switch, including accessory heater(s).**

**⚠ WARNING**

**UNIT OPERATION AND SAFETY HAZARD**

**Failure to follow this warning could result in personal or equipment damage.**

**Systems containing R−410A refrigerant operate at higher pressures than systems containing R−22 refrigerant. Do not use R−22 refrigerant service equipment or components on systems containing R−410A.**

# INTRODUCTION

These instructions cover the installation of low−ambient pressure switch Part Number NASA402LA in all single−speed air conditioners or heat pumps using R−410A refrigerant. Refer to Table 1 for kit usage. This device is a long life pressure switch that maintains head pressure by turning the fan off and on.

Other accessories may be required. Refer to the Required Changes for Cooling Units and Heat Pump Units section.

# DESCRIPTION AND USAGE

The low−ambient pressure switch kit is a long life pressure switch which turns the fan on and off as shown in Table 1.

It is wired in series with black fan lead. Sleeve bearing motors can be used with this control.

# INSTALLATION

The pressure switch is mounted inside the outdoor unit cabinet by using adapter tube and extender tube supplied. The adapter tee is mounted to liquid service valve and the extender tube is routed through one of the suction valve holes in unit cabinet. From inside cabinet, the flare nut is attached to extender tube. (See Fig. 1.)

The pressure switch is wired in series with black or common fan lead.

**PROCEDURE 1—WIRING FOR ALL VOLTAGES OF COOLING UNITS**

For all voltages of cooling units, refer to Fig. 2 and wire low−ambient pressure switch as follows:

1. Disconnect black fan lead from contactor and connect this lead to blue wire from low−ambient pressure switch using connector supplied.
2. Connect remaining blue wire from low−ambient pressure switch to contactor terminal from which black fan lead was removed.

**PROCEDURE 2—WIRING FOR HEAT PUMPS**

Heat pumps require a normally closed isolation relay with the 24−v coil connected to the C and O terminals of defrost board.

**A. 208/230v Applications**

For 208/230−v heat pump applications, refer to Fig. 3 and wire low−ambient pressure switch as follows:

1. Remove black fan lead from defrost board terminal OF2 and reconnect it to NC terminal of isolation relay. Connect blue lead from low−ambient pressure switch to same NC terminal of isolation relay.
2. Connect a wire from the other NC terminal of isolation relay to OF2 terminal of defrost board. Connect remaining blue lead from low−ambient pressure switch to same NC terminal of isolation relay.

**B. 460v Applications**

For 460−v heat pump applications, refer to Fig. 4 and wire low−ambient pressure switch as follows:

1. Remove black fan lead from outdoor fan relay terminal number 3 and reconnect it to NC terminal of isolation relay. Connect blue lead from low−ambient pressure switch to same NC terminal of isolation relay.
2. Connect a wire from outdoor fan relay terminal number 3 to other NC terminal of isolation relay. Connect remaining blue lead from low−ambient pressure switch to same NC terminal of isolation relay.

**Table 1—Kit Usage and Cut In/Cut Out Pressures**

| KIT PART NO. | REFRIGERANT | PRESSURE SWITCH CLOSES (PSIG) | PRESSURE SWITCH OPENS (PSIG) | WIRE COLORS |
|---|---|---|---|---|
| **NASA402LA** | R−410A | 362 | 321 | Blue |

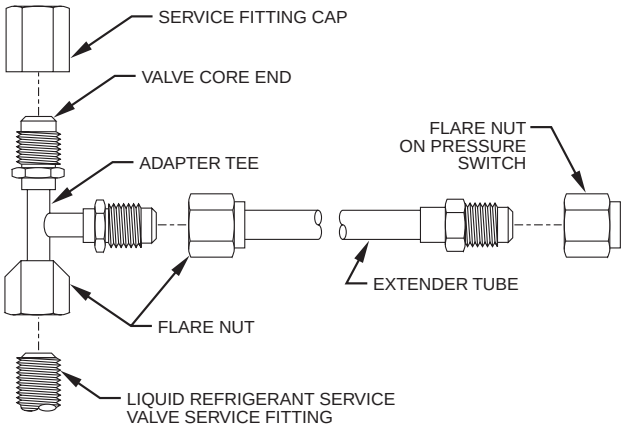


**Fig. 1 — Low Ambient Pressure Switch**

## REQUIRED CHANGES FOR COOLING UNITS AND HEAT PUMP UNITS

1. Crankcase heaters are required on all applications where low−ambient controls are used.
2. Evaporator freeze thermostat NASA001FS is required on all applications where low−ambient controls are used.
3. Wind baffles are recommended for temperatures below 0°F or where there is substantial wind.

**NOTE**: When wind baffles are used, raising unit off of pad a minimum of 4 in. is required to provide better airflow for moderate− and high−ambient temperatures. Check presale literature for available support feet or unit risers.

**⚠ CAUTION**

**CUT HAZARD**

Failure to follow this caution could result in personal injury.

To reduce risk of personal injury, wear personal protective equipment when working with wind baffles. Only experience technicians should fabricate and install wind baffles.

4. For cooling applications only, winter start control NASA001WS must be used where low−pressure switch tripping may be encountered. Winter start control must be wired in parallel with low−pressure switch. This allows a delay of three minutes before low−pressure switch becomes part of control circuit. (See Fig. 5.)

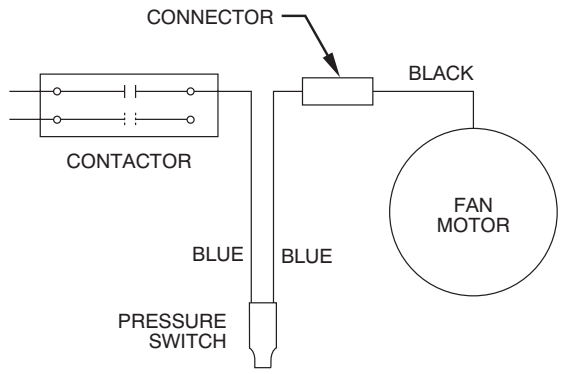


**Fig. 2 — Power Wiring for All Voltages of Cooling Applications**

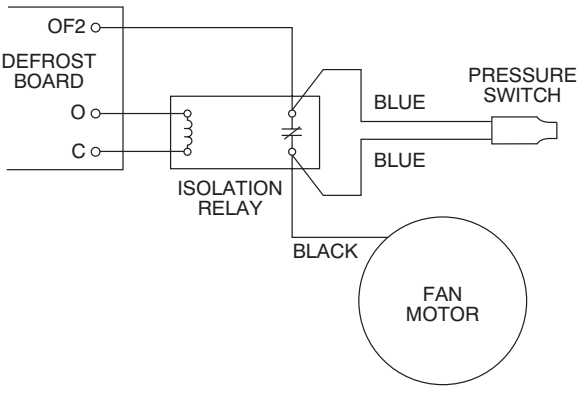


**Fig. 3 — Power Wiring for 208/230v Heat Pump Applications**

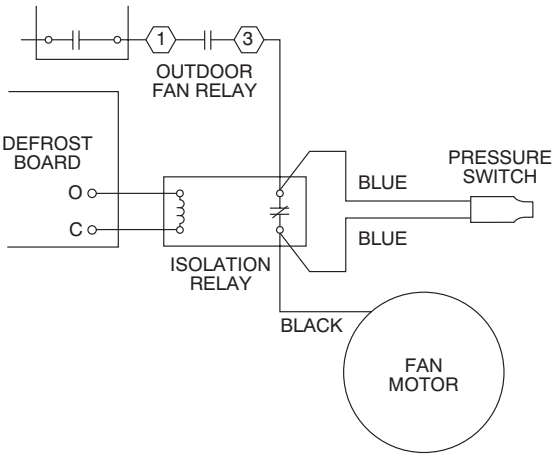


**Fig. 4 — Power Wiring for 460v Heat Pump Applications**

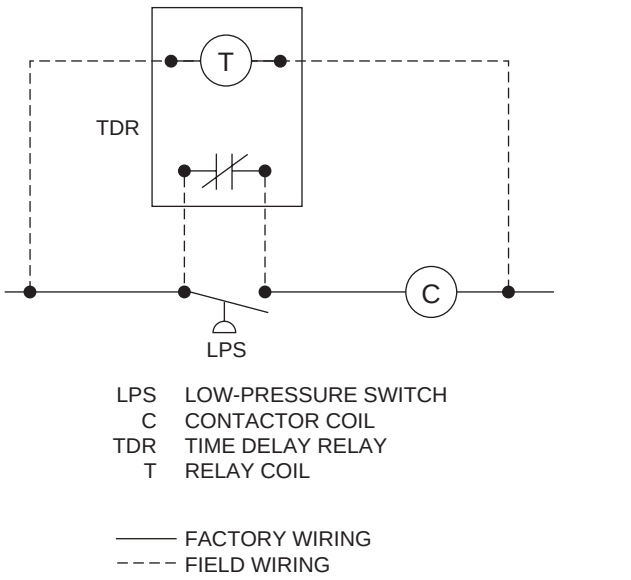


**Fig. 5 — Low Voltage Wiring for Winter Start Control**

## START−UP

To start units equipped with the low−ambient pressure switch, perform the following steps:

1. Turn power on to unit.
2. Set thermostat below room temperature.
3. Wait for the unit to start. There may be a 5−minute delay in the thermostat or in the outdoor unit.
4. Observe unit operation as described below.
   a. The fan will be off when compressor starts.
   b. At outdoor temperatures around 0°F (−17.8°C), fan may not run at all.
   c. At summer temperatures, fan will start after 10 to 30 sec of compressor operation and may not turn off until thermostat is satisfied.
   d. At outdoor ambients between 80°F (26.7°C) and 20°F (−6.7°C), fan will turn on and off to maintain pressure as shown in Table 1.