



# INSTALLATION, OPERATION, AND MAINTENANCE INSTRUCTIONS

## Residential Duct Mount Electronic Air Cleaner

Part Numbers: P102-12, P102-14A, P102-14B, P102-20

**IMPORTANT:** Read entire instructions before installing the air cleaner.

IF YOU NEED HELP call toll free: 1-800-267-8305

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### SAFETY CONSIDERATIONS

Read and follow manufacturer instructions carefully. Follow all local electrical codes during installation. All wiring must conform to local and national electrical codes. Improper wiring or installation may damage air cleaner.

Recognize safety information. This is the safety alert symbol . When the safety alert symbol is present on equipment or in the instruction manual, be alert to the potential for personal injury.

Understand the signal words DANGER, WARNING, and CAUTION. These words are used with the safety alert symbol.

DANGER identifies the most serious hazards which will result in severe personal injury or death. WARNING signifies a hazard which could result in personal injury or death. CAUTION is used to identify unsafe practices which would result in minor personal injury or property damage.

### WARNING

Before beginning any installation or modification, be certain that the main line electrical disconnect switch is in the OFF position. Electric shock could result. Tag disconnect switch with suitable warning labels.

Installation and servicing of air-conditioning equipment can be hazardous due to system pressure and electrical components. Only trained and qualified service personnel should install, repair, or service air-conditioning equipment.

Untrained personnel can perform the basic maintenance functions of 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, tags and labels attached to the unit, and other safety precautions that may apply.

Follow all safety codes. Wear safety glasses and work gloves.

### GENERAL

The electronic air cleaner is designed to remove atmospheric and household dust, pollen, mold spores, bacteria, insecticide dust, animal dander, coal dust, cooking smoke and grease, and tobacco smoke particles down to 0.01 micron.

First the prefilter removes all large visible particles such as lint or hair. Then the electronic air cleaner ionizes the particles in the air (the particles are given a strong positive electrical charge). The particles are then attracted to grounded plates and collected. Pollutants are held onto the plates like a magnet until cleaning when they are washed away. Optional carbon filter(s) then remove the odors from the air.

The electronic air cleaner is available in 4 different models and 3 different airflow capacities: 1200, 1400, and 2000 cfm. See Table 1. The electronic air cleaner is adaptable to all residential forced air furnace or cooling systems. It must be installed in the return air duct, as close to the blower compartment as possible. This location provides the most even airflow across the collecting cells and allows the electronic air cleaner to keep the system motor and blower clean.

Regular maintenance (cleaning of cells and filters) is required by the home owner.

### COMPONENTS

See Fig. 1 for a description of the electronic air cleaner.

**Cabinet** — The cabinet is constructed of heavy gage galvanized steel. Holes are provided in the cabinet for easy mounting in the ductwork or air-handling equipment. See Fig. 2 for cabinet dimensions.

**Table 1 — Specifications**

PART NUMBER	P102-12	P102-14A	P102-14B	P102-20
House Size Area	< 2400 ft <sup>2</sup> < 222.96 m <sup>2</sup>	< 3000 ft <sup>2</sup> < 278.70 m <sup>2</sup>	2400-3000 ft <sup>2</sup> 222.96-278.70 m <sup>2</sup>	> 3000 ft <sup>2</sup> > 278.70 m <sup>2</sup>
Airflow	up to 1200 CFM up to 2039 m <sup>3</sup> /hr	up to 1400 CFM up to 2379 m <sup>3</sup> /hr	up to 1400 CFM up to 2379 m <sup>3</sup> /hr	up to 2000 CFM up to 3398 m <sup>3</sup> /hr
Duct Size	16 x 20 in. 405 x 510 mm	16 x 25 in. 405 x 635 mm	20 x 20 in. 510 x 510 mm	20 x 25 in. 510 x 635 mm
Unit Weight	28 lbs 12.9 kg	30 lbs 13.5 kg	33 lbs 15.3 kg	38 lbs 17.5 kg
Input Voltage	120 V 60 Hz	120 V 60 Hz	120 V 60 Hz	120 V 60 Hz
Power Consumption	30 Watts	30 Watts	30 Watts	30 Watts
Options Available	Activated Carbon Filters	Activated Carbon Filters	Activated Carbon Filters	Activated Carbon Filters

**Power Box** — The removable power box contains the power switch, performance indicator light, safety interlock switch, high voltage power board, and air proving switch.

**Air Proving Switch (APS)** — An integrated air proving switch automatically cycles the electronic air cleaner on and off with the furnace fan. The APS will detect airflow (fan on) and energize the electronic air cleaner.

**High Voltage Tray** — The high voltage tray contains the contacts and wires to supply high voltage to the collecting cells.

**Collecting Cells** — The collecting cells consist of an ionizing section and a plate section. The arrow on the cell must point toward the furnace fan.

**Prefilters** — The prefilters are constructed from aluminum mesh and prevent lint and other large particles from entering the collecting cells.

**Carbon Filters** — The carbon filters are used to remove odors. They are not washable and should be replaced every six months. No more than 3 carbon filters should be used at the same time.

**INSTALLATION**

**Location** — The electronic air cleaner must be installed in the return air duct, as close to the blower compartment as possible. This location provides the most even airflow across the collecting cells and allows the electronic air cleaner to keep the system motor and blower clean. See Fig. 3. When choosing location, there must be adequate room to wire the air cleaner and remove prefilters, cells, and power box.

NOTE: Be sure to notify home owner not to install any device within 2 ft from the top of the air cleaner after installation is complete. Regular servicing of the electronic air cleaner is required. A 2 ft clearance is required to remove filters for cleaning.

**INSTALLATION LOCATION WITH HUMIDIFIER** — If a separate humidifier is purchased, it should be installed in the furnace warm air duct. However, a humidifier may be installed in the return air duct without causing problems to the air cleaner. Care must be taken to ensure that the humidifier does not leak, as this may cause arcing at the electronic air cleaner and mineral deposits on the collecting cells.

An atomizing-type humidifier should only be installed downstream of the electronic air cleaner. If the atomizing-type humidifier is installed upstream, high humidity, salts, and minerals may decrease the efficiency of the collecting cells and cause service problems.

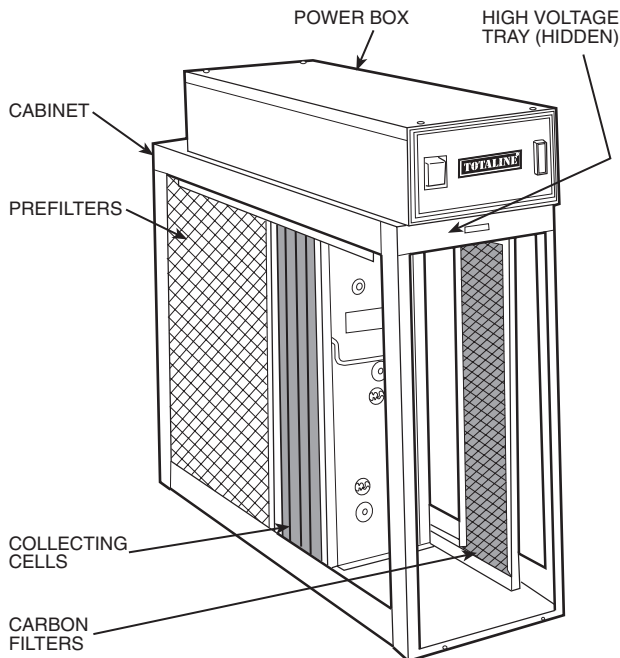
If the atomizing-type humidifier must be installed upstream, the following precautions should be taken:

1. Atomizing-type humidifier must be installed as far from the electronic air cleaner as possible.
2. The collecting cells on the electronic air cleaner must be washed frequently to prevent a mineral deposit build up.

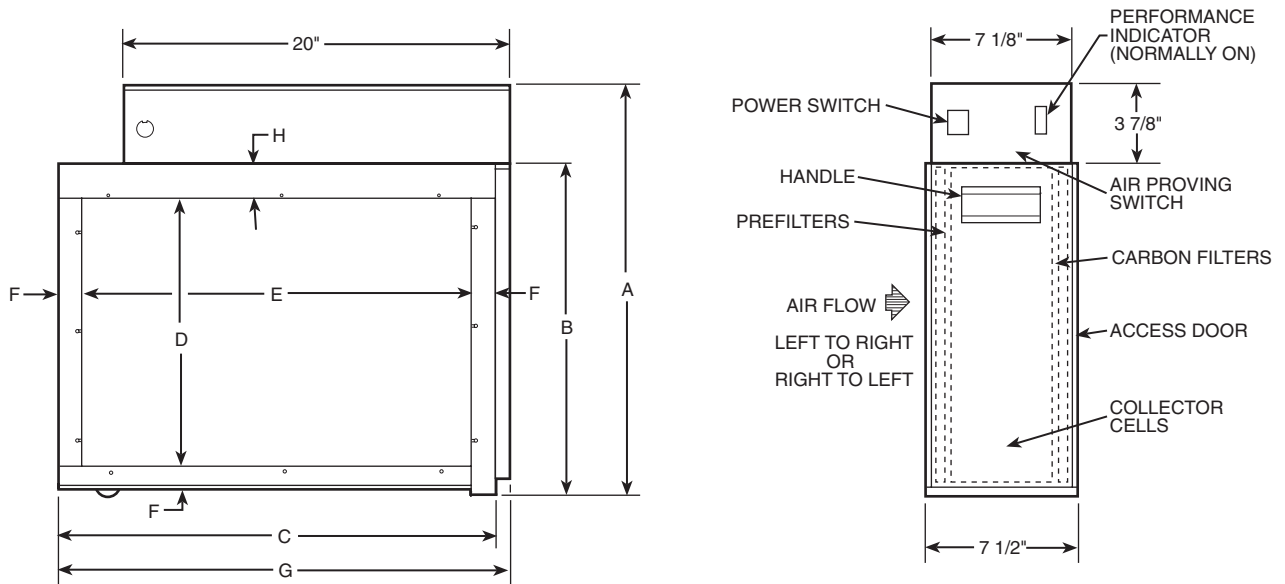
**INSTALLATION LOCATION WITH AIR CONDITIONER** — Whenever possible, the electronic air cleaner should be installed upstream of the cooling coil. This location will clean the air before it reaches the evaporator coil.

**Electronic Air Cleaner Installation** — Perform the following to install the electronic air cleaner:

1. Remove the existing furnace filter. Thoroughly clean the blower compartment and ductwork where the air cleaner is to be installed.
2. Open access door. Slide the prefilters and collecting cells out of the cabinet.
3. Place cabinet in ductwork. Holes are provided to attach cabinet to ductwork or equipment. If the adjoining ductwork is flanged, install the screws so that the screw heads are inside the cabinet. This will help prevent damage to prefilters and optional carbon filters during removal for cleaning. Never put screws or rivets into the removable power box.

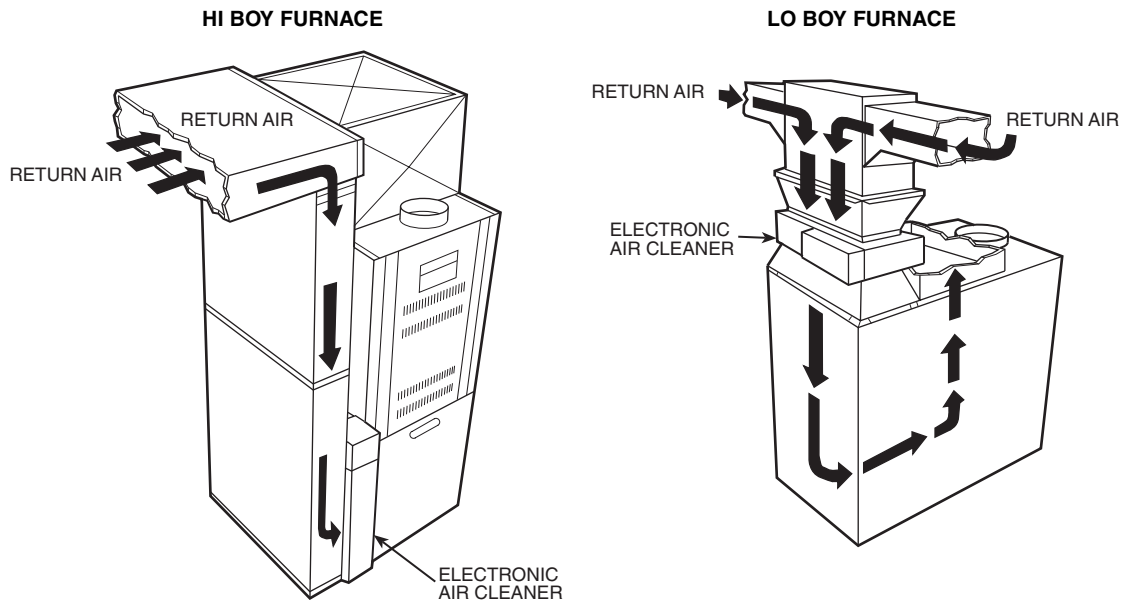


**Fig. 1 — Electronic Air Cleaner**



UNIT	DIMENSIONS — in. (mm)							
	A	B	C	D	E	F	G	H
P102-12	21 (530)	17 (435)	23 <sup>1</sup> / <sub>4</sub> (590)	13 <sup>1</sup> / <sub>8</sub> (335)	20 <sup>3</sup> / <sub>4</sub> (530)	1 <sup>1</sup> / <sub>4</sub> (30)	23 <sup>3</sup> / <sub>4</sub> (605)	2 <sup>3</sup> / <sub>8</sub> (60)
P102-14A	21 (530)	17 (435)	26 (660)	13 <sup>5</sup> / <sub>8</sub> (345)	24 (610)	1 (25)	26 <sup>1</sup> / <sub>2</sub> (675)	2 <sup>1</sup> / <sub>8</sub> (55)
P102-14B	25 <sup>7</sup> / <sub>8</sub> (660)	22 (560)	21 <sup>1</sup> / <sub>4</sub> (540)	18 (460)	18 <sup>3</sup> / <sub>4</sub> (475)	1 <sup>1</sup> / <sub>4</sub> (30)	21 <sup>3</sup> / <sub>4</sub> (550)	2 <sup>3</sup> / <sub>8</sub> (60)
P102-20	25 <sup>7</sup> / <sub>8</sub> (660)	22 (560)	26 (660)	18 (460)	23 <sup>1</sup> / <sub>2</sub> (595)	1 <sup>1</sup> / <sub>4</sub> (30)	26 <sup>1</sup> / <sub>2</sub> (675)	2 <sup>3</sup> / <sub>8</sub> (60)

Fig. 2 — Dimensions



NOTE: 22 in. (560 mm) clearance required for cleaning air cleaner. 6-in. (150 mm) clearance around power box for removal.

Fig. 3 — Electronic Air Cleaner Installation Location

When the air duct does not fit the air cleaner opening, a gradual transition is recommended to reduce air turbulence through the air cleaner and to increase its efficiency. There should not be more than 20 degrees of expansion used on each side of the transition fitting. Do not reduce ductwork to a smaller air cleaner or it will increase the velocity of airflow.

4. If the air cleaner is installed adjacent to an elbow or angle fitting, turning vanes are recommended to improve air distribution across the collecting cells.
5. After electronic air cleaner has been secured, seal seams airtight with duct tape or caulking to prevent dust from entering the system.
6. Replace prefilters and collecting cells. Make sure arrow on cell is pointing towards the fan. The cell handle may need to be repositioned if the airflow is in a different direction than the left to right set up. The handle should face the door. Close access door.

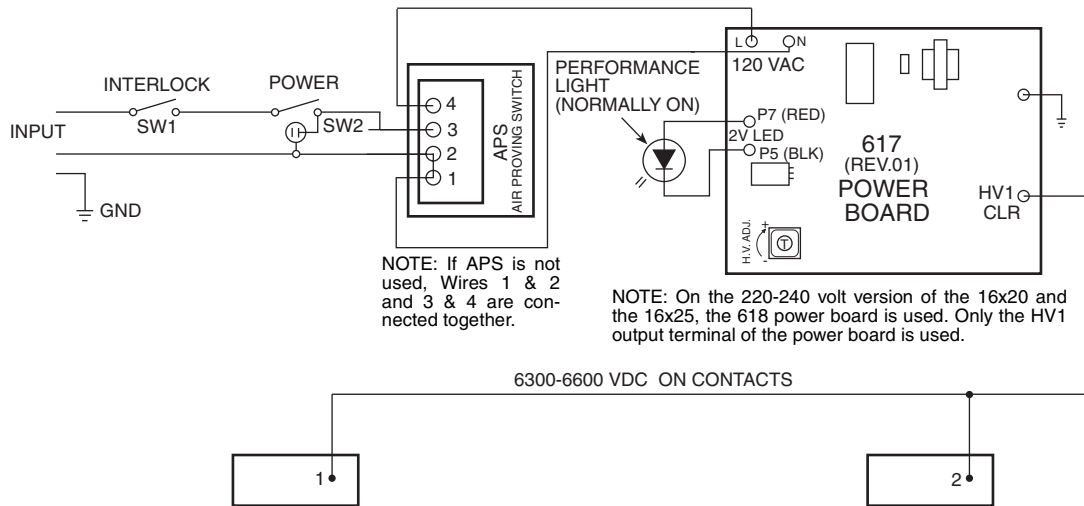
**Wiring** — Wiring should be performed by qualified personnel only. All wiring must comply with all applicable codes and standards. The voltage of the power source must match the voltage indicated on the electronic air cleaner. The electronic air cleaner should operate **ONLY** when the fan is running. Make sure the electronic air cleaner is properly grounded.

**⚠ WARNING**

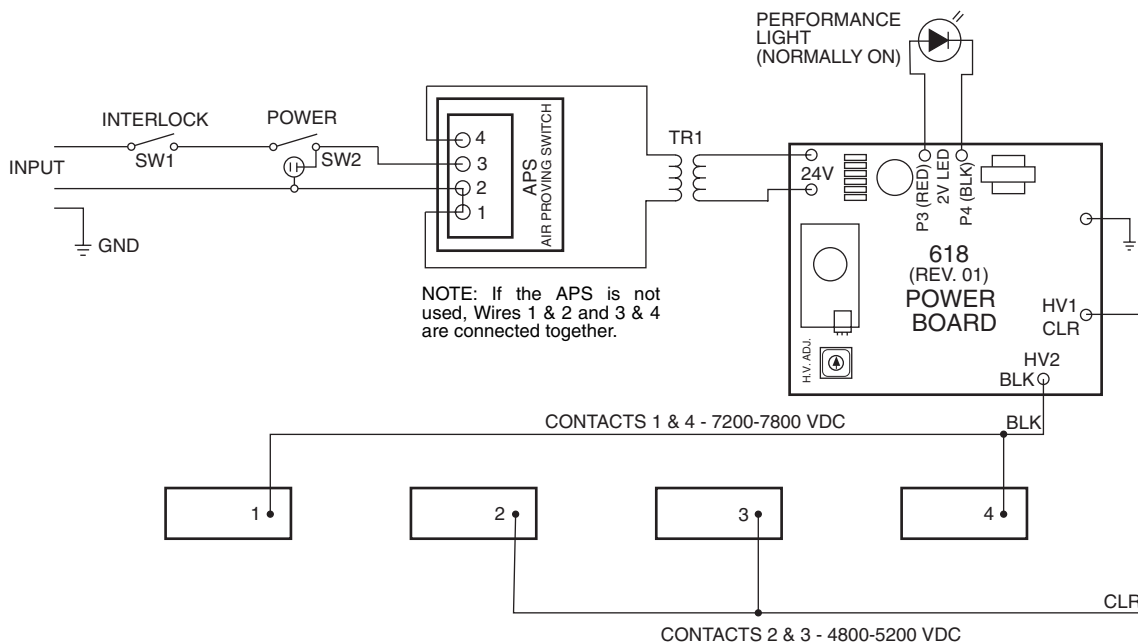
Electrical shock can cause injury or death. Be certain main line disconnect switch is off before wiring.

Wire the electronic air cleaner directly to the 120-v power source. The APS will power the electronic air cleaner when there is sufficient airflow to activate the sensor. See Fig. 4 and 5.

NOTE: The power switch will be lit even if there is no airflow.



**Fig. 4 — Electronic Air Cleaner Wiring — P102-12 and P102-14A Units**



**Fig. 5 — Electronic Air Cleaner Wiring — P102-14B and P102-20 Units**

## SYSTEM CHECK

Perform the following system check before operation.

1. Make sure all electronic air filter components are in place and that access door is closed.
2. Turn electronic air cleaner power switch to ON. Ensure system blower fan is operating. Both power switch light and the performance indicator light should be lit. The power switch light indicates the electronic air cleaner has unit voltage. The performance indicator light shows that the electronic air cleaner is operating.

NOTE: There may be some arcing or snapping sounds from the cells or some odor of ozone. This is normal when the unit is new. In about 2 weeks, as the sharp edges of the collecting cells become smoother, the arcing and odor will disappear.

## OPERATION

The electronic air cleaner will run as long as there is airflow through the ducts. The electronic air cleaner will not run if the blower fan is off.

For proper operation of the electronic air cleaner, these steps should be followed:

- run your heating/cooling system fan continuously and on low speed if available
- remove furniture or carpets which block return air grilles throughout your house, so that air moves freely to the furnace
- check for proper operation of the blower fan on the furnace
- ensure that the prefilters are cleaned on a regular basis.

**Ozone** — The electronic air cleaner emits less than 0.005 ppm of ozone. Ozone may be noticeable in extremely dry environments and can be prevented with proper humidification.

**Dust** — After installation of the electronic air cleaner, you may notice some white dust on table tops and shelves. Most heavy particles (such as lint) settle quickly and do not get filtered through the electronic air cleaner. To reduce lint and dust, use continuous fan operation and keep return vents unrestricted to create an efficient airflow.

Lint dust, which is too heavy to remain airborne, will be cleaner as the darker, staining particles have been removed by the electronic air cleaner. Lint will be more noticeable against dark furnishings. The electronic air cleaner does not produce more lint or dust.

## MAINTENANCE

It is very important that the scheduled maintenance be done by the home owner. If cells and filters are not cleaned and changed on a regular basis, the electronic air cleaner will not operate effectively.

### ▲ CAUTION

Make sure to turn electronic air cleaner off before performing any maintenance or removing any components.

**Cell and Prefilter Cleaning** — The collecting cells and prefilters must be cleaned on a regular basis for the air cleaner to function at its peak efficiency. The frequency of cleaning will vary from one house to another. On average, the cells should be cleaned every 3 months. To clean cells:

1. Remove door, cells, and prefilters.
2. Place cells in a laundry tub. Rinse cells with hot water and spray completely with a non-chlorine, noncorrosive, non-abrasive liquid household detergent. (DAX

detergent is recommended.) Allow detergent to run down both sides of plates and ionizing wires. Let stand for 5 minutes.

3. Rinse cells with hot water (maximum 120 F [49 C]).
4. If dirt remains, let cells soak in solution of DAX detergent and water for 30 minutes.
5. Tilt cells on a 45 degree angle on their short side and allow to dry completely (approximately 8 to 10 hours). A hair dryer may be used to speed up drying time.
6. Wash prefilters. Do not wash in the same water as collecting cells. Spray prefilters with DAX detergent, rinse, and let dry.
7. Place cells and prefilters back into cabinet. Close access door and turn unit on. If the performance indicator light does not come on or arcing occurs, turn the electronic air cleaner off and allow the furnace fan to dry the cells completely.

### ▲ CAUTION

Damage to cells may occur if improperly handled or washed. Do not wash cells in a dishwasher. Never use any object to clean between the cell plates as this may cause damage to plates or ionizing wires. Never place cell in oven to dry. The edges of the cell may be sharp — handle with care.

**Carbon Filter Replacement** — If the air cleaner has optional carbon filters, they should be replaced every 3 to 6 months. Carbon filters remove odors from the air. Filters are NOT washable. To replace filters, perform the following:

1. Turn off power switch on electronic air cleaner.
2. Turn off furnace fan.
3. Open electronic air cleaner access door.
4. Remove cells from electronic air cleaner.
5. Pull out the used carbon filters. If the carbon filters do not slide out easily, tilt them at a 45-degree angle and they will fall out.
6. Put new carbon filters into electronic air cleaner. Space filters evenly across face of air cleaner. Never put more than 3 carbon filters in the electronic air cleaner as this may cause a problem with airflow.
7. Reinstall cells. Close access door.
8. Turn on power to furnace fan and electronic air cleaner.

## SERVICE

### ▲ WARNING

Electronic air cleaners use high voltage. Use extreme caution when performing service on electronic air cleaner. Only trained personnel should perform service. Electric shock can cause injury or death.

**Testing Air Proving Switch (APS)** — The APS sensor must protrude through the plastic bushing to work effectively. The sensor is very sensitive and operation may be affected by cold basement temperatures, an air exchanger, or a fresh air duct connected to the cold air return just upstream of the electronic air cleaner.

The APS uses a Triac in its output circuit which affects the voltage sine wave. Using a regular digital voltmeter will give a false reading. To check the output from the APS, use a true RMS (root mean square) meter to measure the output at terminals 1 and 4 of the APS. The output should be between 105 and 115 VAC, depending on the airflow across the sensor.

A neon lamp may be used to test the output of the APS. Place the leads of the lamp across terminals 1 and 4 of the APS, or across the 120 v input of the single output power board. If the lamp lights, the voltage is sufficient for operation.

When the electronic air cleaner is turned on without airflow, the APS sensor heats up and, after 30 seconds, opens the circuit to turn off the power board. When the fan starts up (the sensor is cooled), the circuit will close, the power board is turned on, and the performance light will come on.

The light on the power switch will be lit even when the APS is open.

If the power board fails to come on with the blower on, check that the sensor is properly set down, through the plastic bushing, in front of the power box. To check the APS for proper operation, turn the unit on and activate. The power board should come on immediately, and then turn off in 30 seconds as the sensor heats up. To check sensor, blow directly on it lightly. This should activate the power board within 10 seconds. Service the sensor carefully; the sensor leads are 120 V.

**Replacing an Air Proving Switch (APS)** — Before replacing the APS, turn off the power to the electronic air cleaner. Perform the following procedure to replace the APS:

1. Disconnect wiring from terminals 1, 2, 3, and 4 on the APS. See Fig. 4 and 5.
2. Release circuit board from plastic spacers by pinching end of spacer and pulling board out.
3. Install new APS on plastic spacers. Ensure sensor protrudes slightly through plastic bushing.
4. Connect wiring to terminals on APS. See Fig. 4 and 5. Wiring from power source is connected to terminals 2 and 3. Wiring to power board is connected to terminals 1 and 4.
5. Test the new APS. See procedure on page 5.

**Testing for High Voltage at Power Board** — A high voltage meter capable of measuring up to 10,000 VDC is required to test the voltage. Perform the following procedure to test for high voltage at the electronic air cleaner power board:

1. The air cleaner should be on with the door closed. The unit fan should be running. The electronic air cleaner should be on at least 5 minutes to allow voltage to stabilize.
2. Remove cover from power box.
3. Connect the ground of the high voltage meter to an unpainted surface in the power box.
4. Check terminals HV1 and HV2 (where applicable) on the power board to determine if voltage is present.
5. If no voltage present, remove both cells from the air cleaner and replace door.
  - a. Check the voltage at HV1 and HV2 (where applicable) again.
  - b. If voltage is present, the problem is with one of the cells or the copper contact on the high voltage tray.
  - c. With a flashlight, look into the cabinet to check condition of the copper contacts.
  - d. If the contacts are not bent, replace one cell and retest voltage. If cell is OK, test the other cell. If the problem is with a cell, see troubleshooting guide.
  - e. Check the APS to make sure that it is functioning correctly.
  - f. Check the transformer to make sure power is being supplied to the electronic air cleaner.
6. If there is voltage present but the performance light does not come on, replace light.

7. High voltage can be adjusted with high voltage potentiometer if required.

**Replacing Performance Light** — Before replacing performance light, turn off power to the electronic air cleaner at the source. Perform the following procedure:

1. Remove the power box cover.
2. Disconnect the performance light wiring connected to the LED terminals on the power board.
3. Push the light out through the front of the power box.
4. Push the new light into the power box.
5. Connect the wiring to the LED terminals on the power board. See Fig. 4 and 5.
6. Replace cover.
7. Return power to electronic air cleaner. Test light.

**Replacing a Power Board** — Before replacing power board, turn off power to the electronic air cleaner at the source. Perform the following procedure:

1. Remove the power box cover.
2. Disconnect wiring from the LED, HV1, and 120 VAC power board terminals (P102-12 and P102-14A) or LED, HV1, HV2, and 24 v terminals (P102-14B and P102-20) and ground. See Fig. 4 and 5.
3. Remove the hex nut from the power board.
4. Release the power board from the three plastic board spacers by pinching the end of the spacers and pulling the board out.
5. Push new board onto spacers. Make sure spacers click into place to hold down board.
6. Screw on the hex nut saved from Step 3. Ensure the star washer is in place over the steel spacer for proper grounding.
7. Reconnect wiring to LED, HV1, and 120 VAC (P102-12 and P102-14A) terminals or LED, HV1, HV2, and 24 v terminals (P102-14B and P102-20) and ground on the new power board.
8. Replace power box cover.
9. Return power to electronic air cleaner. Test power board.

NOTE: Although the power board has been set before shipping, it may be necessary to reset the voltage to the correct load for optimum efficiency. Refer to Testing Voltage of Power Board section for more information.

**Testing the 24-V Transformer (P102-14B and P102-20 Only)** — To test the 24-v transformer, perform the following procedure:

1. The electronic air cleaner should be on. The unit fan should be running. The electronic air cleaner door should be closed.
2. Remove power box cover.
3. Disconnect the leads of the 24-v transformer from the power board. See Fig. 5.
4. Measure voltage across leads with a voltmeter. Voltage should read 24 to 27 VAC.
5. If no voltage present, check the operation of the APS.
6. Before replacing transformer, check the resistance of the power board input. Input should read above 40 Kohm. If resistance is below 40 Kohm, the power board may be the cause of the transformer failure.
7. Reconnect leads to power board.
8. Replace power box cover.

### Replacing the 24-V Transformer (P102-14B and P102-20 Only) —

Before replacing 24-v transformer, turn off power to the electronic air cleaner at the source. Perform the following procedure:

1. Remove power box cover.
2. Disconnect the secondary leads from the transformer to the 24 v terminals on the power board. See Fig. 5.
3. Cut the primary leads (to the APS) close to the transformer.
4. Remove the two hex head nuts from the transformer studs.
5. Remove transformer.
6. Place new transformer over studs and re-install two hex head nuts to lock into place.
7. Connect secondary leads (white) to the 24 v terminals on the power board.
8. Wire nut primary leads from APS (cut in Step 3) to primary leads from transformer.
9. Replace power box cover.
10. Turn on power to electronic air cleaner and test.

**Testing Voltage of Power Board —** Voltage on the power board may drop below required level when installation area is too damp, too cold, or if there is a leakage of water from a humidifier. Voltage on power board may be too high when installation area is too dry or too hot. By adjusting the HV ADV potentiometer, the voltage can be set to optimum level. A high voltage meter capable of measuring 10,000 VDC is required. To test and adjust voltage level, perform the following procedure:

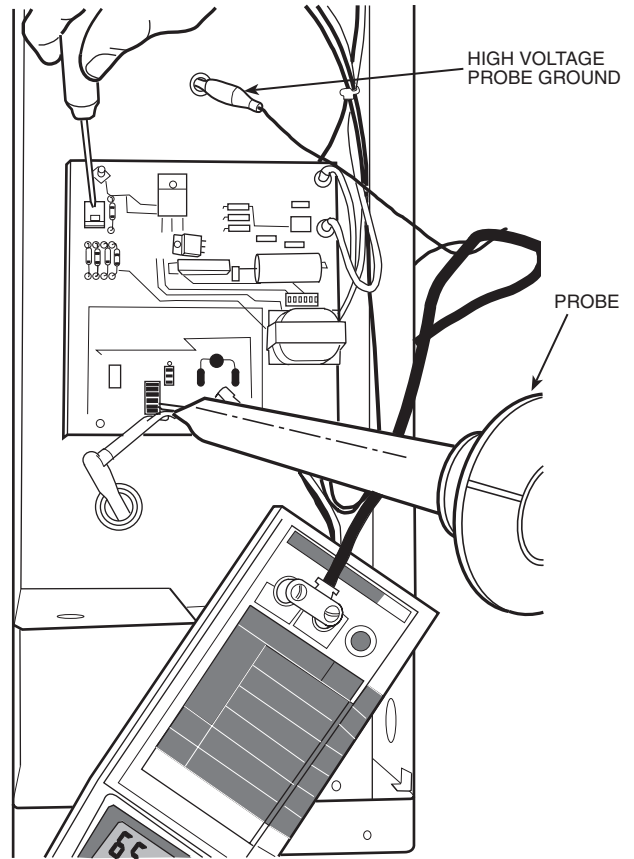
1. Turn the electronic air cleaner off.
2. Remove the power box cover.
3. Connect the ground of the high voltage meter to an unpainted surface in the power box.
4. Turn on the electronic air cleaner and wait 5 minutes before checking voltages to allow voltages on cells to stabilize.
5. Measure the voltages at HV1 and HV2 (where applicable) on the power board. See Fig. 6.
6. Adjust the HV ADV potentiometer until the voltage reading matches the voltage in Table 2.
7. Turn off the electronic air cleaner.
8. Remove the high voltage meter.
9. Replace the power box cover.
10. Turn on electronic air cleaner.

**Table 2 — Power Board Voltage Settings**

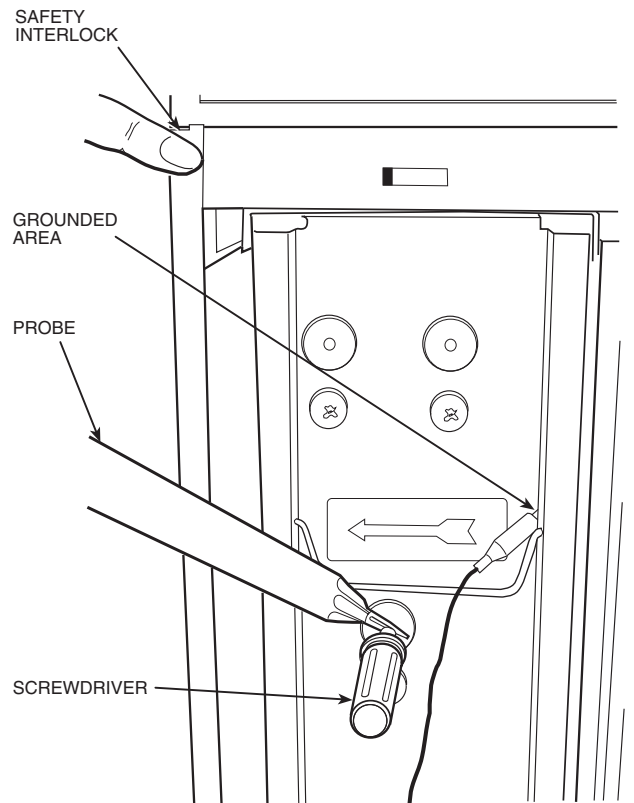
UNIT	MAXIMUM VOLTAGES ON PLATES (K VDC)	MAXIMUM VOLTAGE ON IONIZER (K VDC)
P102-12, P102-14A	6.2 - 6.5 (HV1)	6.2 - 6.5 (HV1)
P102-14B, P102-20	4.8 - 5.2 (HV1)	7.2 - 7.8 (HV2)

**TESTING VOLTAGE AT CELL —** To test the voltage at the cell, perform the following procedure:

1. Open the door to the air cleaner. Air cleaner will shut off.
2. Insert a thin shafted screwdriver 2 to 3 inches into the hole in the round end plate insulator. See Fig. 7.
3. Attach the ground of the high voltage meter on to a grounded area of the cell.
4. Place the tip of the high voltage probe on the shaft of the screwdriver. Press down the safety interlock. Power to electronic air cleaner will come on.



**Fig. 6 — Testing Voltage at Power Board**



**Fig. 7 — Testing Voltage at Cell**

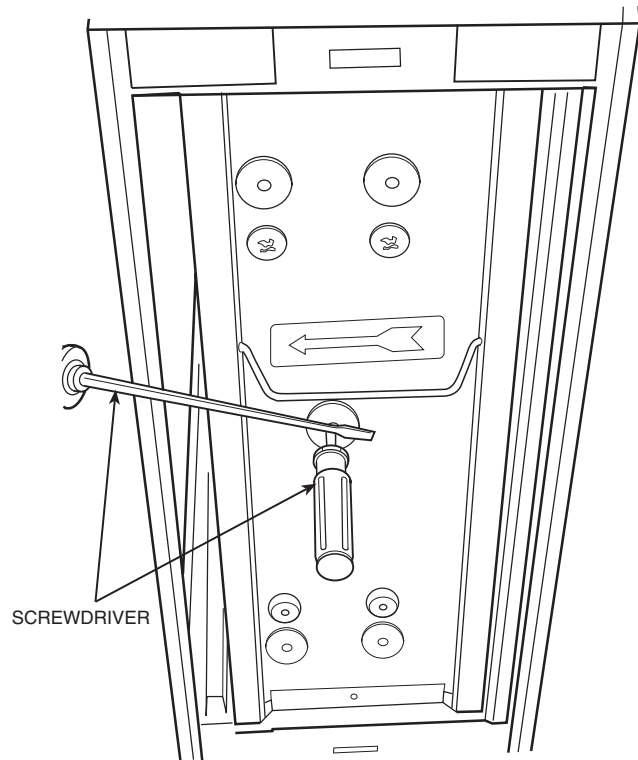
5. Wait until the voltage stabilizes then take a reading. Adjust the HV ADV potentiometer until the voltage reading matches the voltage in Table 2. If the voltage fails to stabilize or jumps up and down by more than 100 v, there may be a bad contact in the cell or a bad contact between the cell contacts and the high voltage contacts on the contact tray.
6. Let up on the safety interlock. Remove high voltage meter.
7. Remove screwdriver and close access door.

**SET APPROXIMATE VOLTAGE WITHOUT HIGH VOLTAGE METER** — A high voltage meter should be used. If one is not available, this method can be used. This will only set an approximate voltage. After using this method, the voltage should be reset with a high voltage meter as soon as possible.

1. Remove power box cover.
2. Turn the HV ADV potentiometer fully clockwise. Electronic air cleaner may arc or snap at this point.
3. Turn the HV ADV potentiometer counterclockwise slowly until the arcing and snapping stops.
4. Replace power box cover.

**Testing Cell for Bad Contacts** — To test a cell for bad contacts, perform the following procedure:

1. Open access door to air cleaner.
2. Place a screwdriver between plates of the cell, or place a small screwdriver into the hole in the end plate insulator and short with another screwdriver to cell end plate. See Fig. 8.



**Fig. 8 — Bad Contact Test**

3. Press safety interlock switch to start electronic air cleaner. There should be an initial snap when the plates are shorted, then no sound. If a hissing occurs, then there is a bad contact. Look along the top of the cell, with the short still in place. If there is a small arc between the cell top and copper contact, then that is the bad contact. Pull cell out and gently pull copper contact down.

If an arc is not seen and there is a bad contact, then the problem may be the internal contact of the cell. With an ohmmeter, check continuity between the top disc contact and the first plate. The reading should be close to 0 ohms. If not, bend the contact to touch the plate. On dual voltage units (three disc contacts), there are two internal contacts, one on each side. Test each contact.

4. Let up on safety interlock.
5. Remove screwdrivers.
6. Close access door.

**Removing Power Box** — To remove the power box, perform the following procedure:

1. Turn the main furnace switch off or disconnect the power source.
2. Remove the power box cover.
3. Disconnect the source wires to the electronic air cleaner. Cap off the wires so the furnace can still be operated.
4. Disconnect high voltage leads from power board.
5. Remove three nuts holding the power box to the cabinet.

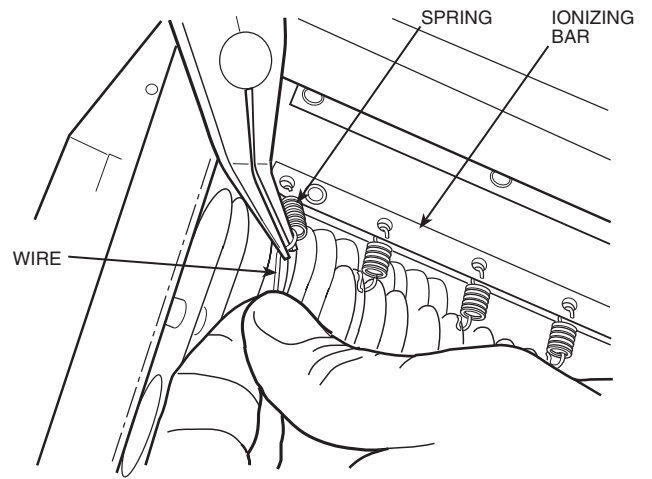
**Removal of High Voltage Contact Tray** — To remove the high voltage contact tray, perform the following procedure:

1. Turn off power to electronic air cleaner.
2. Remove cells, prefilters, and carbon filters from electronic air cleaner.
3. Remove the high voltage wires from the power board.
4. Remove the 4 screws that hold the high voltage contact tray in place. Two screws are located at the top, rear section of the cabinet. The other two screws are located in the front, top section of the cabinet (behind the door). Lower the tray into the cabinet area while feeding the high voltage wires down through the plastic wire bushing. The wire with clear or no sleeving is connected to terminal HV1 on the power board. The wire with black sleeving is connected to terminal HV2 on the power board.
5. To remove the tray, slide the tray forward and release the tab at the rear end of the cabinet.
6. To reinstall high voltage contact tray, reverse above procedure.



**Replacing a Tungsten Ionizing Wire** — Replacement wires are cut to the correct length and have eyelets at each end for easy replacement. To replace an ionizing wire, perform the following procedure:

1. Turn off power to electronic air cleaner.
2. Remove cell from electronic air cleaner.
3. Remove all parts of broken wire, as well as spring and S-hook. If necessary, cell may be used temporarily with one wire missing until a replacement is received.
4. Using needle nose pliers, place spring hook in the hole of the ionizing bar near cell top.
5. Place eyelet of wire over the S-hook and place S-hook into hole on ionizing bar on other side of cell. Keep wire tight to ensure S-hook remains in hole.
6. Using the needle nose pliers, grab the end of the spring and stretch towards loop in wire. Place eyelet in wire over spring hook and release spring. See Fig. 9.
7. Install cell in electronic air cleaner.
8. Return power to electronic air cleaner.
9. Test cell for proper operation.



**Fig. 9 — Replacing an Ionizing Wire**

## TROUBLESHOOTING

Refer to Table 3 for troubleshooting information.

**Table 3 — Troubleshooting**

PROBLEM	PROBABLE CAUSE	REMEDY
<b>Unit does not function correctly. Power light and performance indicator light are off.</b>	Fan is not on.	Turn furnace fan on.
	Wiring improperly connected.	Check wiring.
	Defective power switch.	Check power switch for continuity with multimeter. Replace if defective.
	Defective safety interlock.	Remove door and press safety interlock with a screwdriver. If lights come on, bend interlock lever towards front and close door.
<b>Power light is off and performance indicator light is on.</b>	Power (120 v) is not provided to device.	Check power wiring with multimeter.
	Defective power light.	Replace power switch.
<b>Unit does not function correctly. Power light is on and performance indicator light is off.</b>	Short in cells. Due to: 1. Broken ionizing wire(s). 2. Large particles wedged between cell plates. 3. Cells washed recently and are still wet. 4. Round end plate insulator is burnt or melted. 5. Cell plates are bent.	1. Remove wire or wire fragments, spring and S-hook. Replace. 2. Shake large particles out or wash cell. 3. Allow cells to dry completely. 4. Replace end plate insulator. 5. Straighten plates with pliers.
	Defective performance indicator light.	Determine whether high voltage is present by testing power box. If present, replace indicator light.
	Defective power board.	Adjust high voltage potentiometer on power board clockwise. If high voltage is not present, replace power board.
	Air proving switch sensor is burnt out.	Remove power box and connect with 120 v. Lightly blow on air switch at the bottom of power box. If light does not come on, replace switch.
	Off board 24-v transformer is not working.	Verify output of transformer. Replace if necessary.
<b>Cell makes loud hissing noise or causes radio interference.</b>	Internal cell contacts are not touching plates.	Test contact and repair.
	Copper contacts on high voltage tray not making good connection on cell.	With needle-nose pliers, gently pull contacts down or replace contacts.
<b>Cells arcing excessively (power light and performance indicator light on)</b>	Cells wet from washing.	Allow cells to dry completely.
	Particle lodged in cell or broken ionizing wire.	Wash cell. Shake particle out of cell. Replace wire, if necessary.
	Ducts were not cleaned prior to installation of electronic air cleaner.	Clean ducts.
	Cell plates are bent.	Remove cells and adjust to original spacing using needle nose pliers.
	Voltage is too high.	Adjust high voltage potentiometer on power board counterclockwise.
	Humidifier (if installed) is leaking water on air cleaner.	Repair humidifier. If possible, move humidifier to different location.
<b>Cells arcing excessively at top of cell near copper contacts (power light and performance indicator light on)</b>	Contacts on high voltage tray are broken or bent upward.	If possible, pull down contacts with needle nose pliers or remove high voltage tray and replace contacts.
<b>Cells not collecting dirt (power light and performance indicator light on)</b>	Arrow on cell(s) not pointing towards fan blower.	Reposition cells.
	Furnace fan is on "Automatic" setting (air cleaner not on continuously)	Use "Fan On" furnace fan setting for continuous fan operation.
	Not enough voltage on collecting cells.	Adjust high voltage potentiometer clockwise on power board.
<b>Ozone odor</b>	Cell plates are bent.	Straighten with needle nose pliers.
	Loose or broken ionizing wires.	Replace wires.
	Dirty cells.	Wash cells.
	Electronic air cleaner is on when system fan is not running. Air switch not activated, or electronic air cleaner wired incorrectly.	Check operation and wiring of air switch and electronic air cleaner.
	Incoming voltage is higher than 120 v.	Adjust high voltage potentiometer counterclockwise on power board.
	Air cleaner is oversized for house. Not enough airflow to cover surface area of cells.	Use correct size of electronic air cleaner.
	Home is extremely dry.	Repair or install central humidifier.
<b>More dust after installation than before</b>	Lint dust too heavy to remain airborne.	Keep fan running continuously. Ensure that return air grilles are not obstructed.
	Gaps around electronic air cleaner.	Seal or use duct tape around electronic air cleaner cabinet.

**ELECTRONIC AIR CLEANER  
LIMITED FIVE-YEAR WARRANTY**

**FIVE-YEAR WARRANTY** — This CARRIER CORPORATION product is warranted to be free from defects in material and workmanship under normal use and maintenance for a period of five years from the date of original installation. A new or remanufactured part to replace the defective part will be provided without charge for the part itself, through a qualified servicing CARRIER CORPORATION dealer or service, PROVIDED the defective part is returned to our distributor. The replacement part assumes the unused portion of the warranty.

**THIS WARRANTY DOES NOT INCLUDE ANY ADDITIONAL LABOR ALLOWANCE OR OTHER COSTS**, incurred for diagnosis, repairing, removing, installing, shipping, servicing, or handling of either defective parts or replacement parts. SUCH COSTS MAY BE COVERED BY a separate warranty provided by the installer.

**LIMITATIONS OF WARRANTIES** — ALL IMPLIED WARRANTIES (INCLUDING IMPLIED WARRANTIES OF MERCHANTABILITY) ARE HEREBY LIMITED IN DURATION TO THE PERIOD FOR WHICH THE LIMITED WARRANTY IS GIVEN. THE EXPRESSED WARRANTIES MADE IN THIS WARRANTY ARE EXCLUSIVE AND MAY NOT BE ALTERED, ENLARGED, OR CHANGED BY ANY DISTRIBUTOR, DEALER, OR OTHER PERSON WHATSOEVER.

CARRIER WILL NOT BE RESPONSIBLE FOR:

1. Normal maintenance as outlined in the installation and servicing instructions or owners manual including cleaning and/or replacement of filters, media or electronic cells.
2. Damage or repairs required as a consequence of faulty installation or application by others.
3. Failure to start due to voltage conditions, blown fuses, open circuit breakers or other damages due to the inadequacy or interruption of electrical service.
4. Damage or repairs needed as a consequence of any misapplication, abuse, improper servicing, unauthorized alteration, or improper operations.
5. Damage as a result of floods, winds, fires, lightning, accidents, corrosive atmosphere, or other conditions beyond the control of CARRIER CORPORATION.
6. Parts not supplied or designated by CARRIER CORPORATION.
7. CARRIER CORPORATION products installed outside the continental U.S.A., Alaska, Hawaii, and Canada.
8. ANY SPECIAL INDIRECT OR CONSEQUENTIAL PROPERTY OR COMMERCIAL DAMAGE OF ANY NATURE WHATSOEVER. Some states do not allow the exclusion of incidental or consequential damages, so the above limitation may not apply to you.

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Model No. \_\_\_\_\_ Unit Serial No. \_\_\_\_\_

Date of Installation \_\_\_\_\_ Installed by \_\_\_\_\_

Name of Owner \_\_\_\_\_ Address of Installation \_\_\_\_\_

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