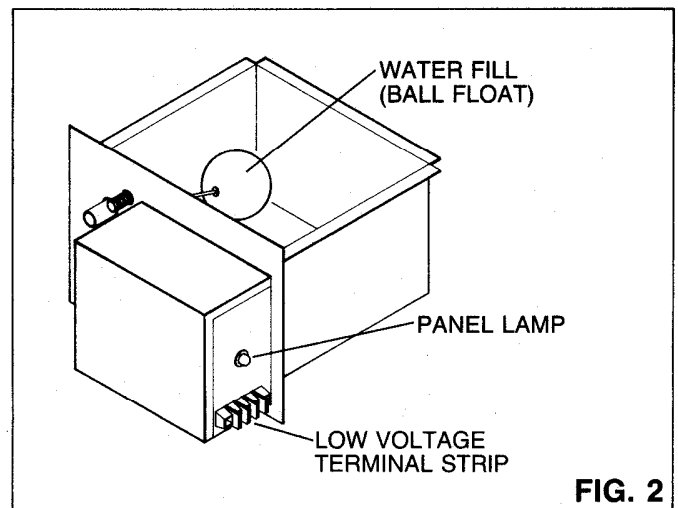
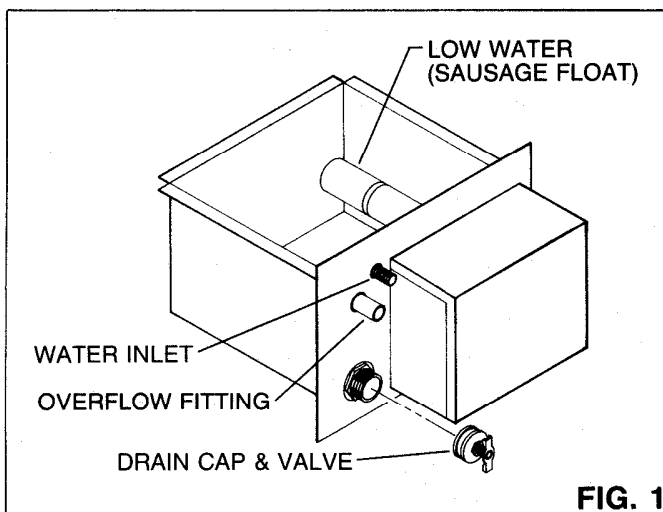


# Installation Instructions & Owner's Manual

## AUTOFLO STEAM UNIT – POWER HUMIDIFIERS MODELS SU-14 AND SU-20

The AutoFlo Power Humidifier you have purchased has been designed to be simple to operate and maintain.

Familiarizing yourself with the items listed in Figures 1 and 2 will assist you in installing your AutoFlo Model SU Power Humidifier.



Parts included in the Model SU Humidifier package are:

1. SU Humidifier
2. Self-Piercing Saddle Valve
3. Installation and Operation Manual
4. Mounting Template
5. Mounting Screws

Additional parts recommended:

1. Drain Line – 5/8" I.D. automotive or dish washer drain hose
2. 1" Hose Clamp
3. Humidistat – AutoFlo Models 052000 or 062000
4. Electrical Wiring and Connections
5. Relay (if necessary) AutoFlo Model 1549

## SIMPLIFIED INSTALLATION INSTRUCTIONS

1. Select the mounting location and tape on the mounting template.
2. Punch or drill the (8) mounting holes.
3. Cut out the SU opening in the duct.
4. Connect the water line.
5. Check water level and adjust float.
6. Insert the SU into the opening and screw in place.
7. Connect an overflow drain line.
8. Make 24 VAC electrical connections to blower interlock.
9. Install humidistat.
10. Plug power cord into a grounded outlet.

# DETAILED INSTALLATION INSTRUCTIONS

## 1. LOCATION

The Humidifier can be installed in warm air (supply), plenums or the cold air (return) ducts. The preferred location is the supply plenum of the heating and air conditioning system. The humidifier does not require warm air to evaporate the water to provide humidity, but it will operate more efficiently in the warm air plenum and less condensate is likely to form.

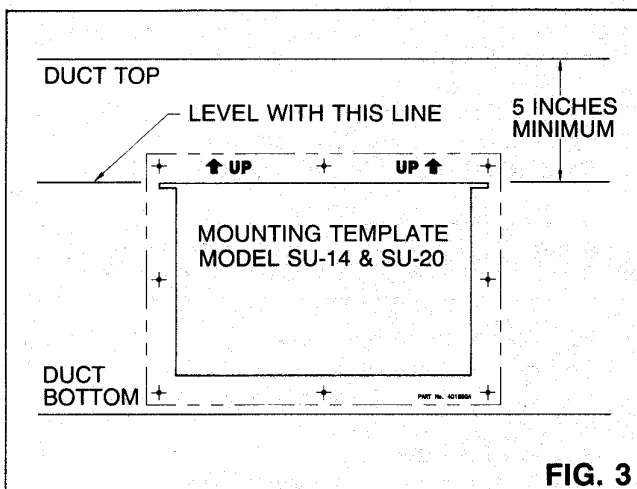
When selecting a location on the duct, be certain that there is enough room for the water reservoir. There should be at least five (5) inches above the reservoir (see Figure 3) and the reservoir should not occupy more than 25 percent of the duct space. If this criteria cannot be met, you should order the "Under Duct Adaptor," Model 401930, in order to properly install the humidifier.

If the "Under Duct Adaptor" is used, mount the humidifier as directed by the instructions in the "Under Duct Adaptor" kit and disregard Steps 2 and 3 in this Installation Manual.

If the humidifier is installed on fiberglass duct, the installer must provide structural support for mounting. The fiberglass duct will not provide a good material for the mounting screws.

## 2. MOUNTING TEMPLATE

Once the installation location has been established, the mounting template is taped to the duct, as seen in Figure 3. The template must be leveled using the top of the cutout on the template. The template should be located so that the bottom of the reservoir cut-out is flush with the inside of the bottom of the duct. Since most ducts are insulated, about one (1) inch, must be accounted for when determining the location for the bottom of the reservoir cut-out.



## 3. CUT OUT OPENINGS

Use an electric drill, with grounded power cord, to drill eight (8) mounting holes, 1/8" diameter, in the duct. These can be drilled through the template at the locations indicated on the template.

A saber saw or tin snips can be used to cut out the water reservoir opening.

Do not install the humidifier until the water level has been checked and adjusted. See Section 5.

## 4. WATER CONNECTIONS

### A. WATER SUPPLY

NOTE: Never install the saddle valve on the bottom of the water pipe. Sediment in the water pipe may clog the saddle valve.

Installation instructions for the saddle valve are printed on the plastic bag containing the saddle valve and its components.

The saddle valve must be connected to the Humidifier with copper tubing. When tightening the hex compression nut, tighten only enough to assure there are no leaks.

The copper tubing should be connected to the saddle valve and the humidifier and water allowed to fill the humidifier in order to check for correct water level, prior to installation.

### B. OVERFLOW DRAIN LINE

The use of an overflow drain line is required.

Use 5/8" ID rubber tubing, such as standard automotive heater or dishwasher drain hose. Slip the hose over the 5/8" drain fitting and use a 1" hose clamp to secure.

Route the hose to a suitable drain. DO NOT route the hose above the bottom of the humidifier.

## 5. FLOAT ADJUSTMENT

### A. WATER LEVEL ADJUSTMENT

#### CAUTION:

When making adjustments to the water level by bending the ball float arm, refer to Figures 4 and 5.

DO NOT connect, (plug-in) the SU power cord!

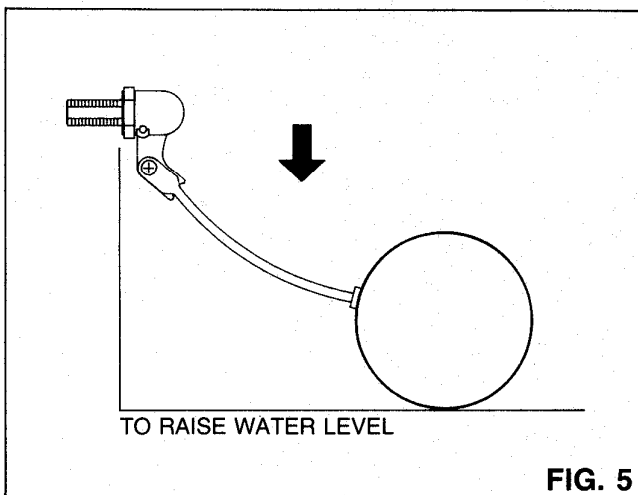
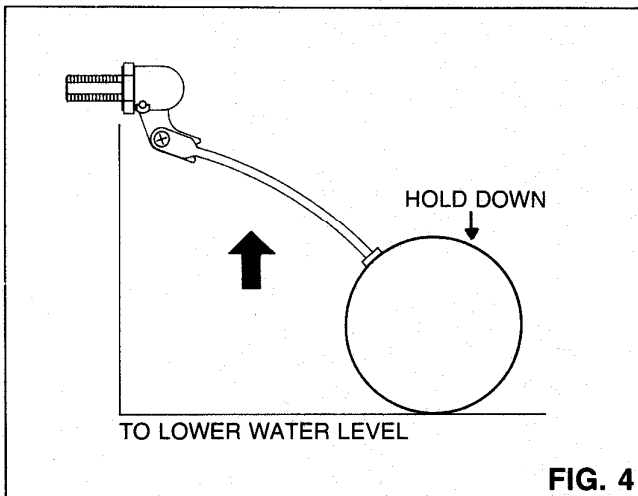
After connecting the water line, as described in Section 4 above, place the humidifier on a table, with the reservoir flat and level. Turn on the water and allow the reservoir to fill until the ball float has stopped the water flow into the reservoir.

The water level should be between 1-1/4" and 1-3/4" above the heating element.

If the water level is greater than 1-3/4" above the heater element, the ball float arm must be bent slightly to lower the water level. Refer to Figure 4 and bend the ball float arm in this manner.

Bending the ball float arm can be accomplished by holding the ball float down against the bottom of the reservoir and pulling up on the center of the float arm.

If the water level is less than 1-1/4" above the heater element, the ball float arm must be bent



slightly to raise the water level. Refer to Figure 5 and bend the ball float arm in this manner.

Bending the ball float arm can be accomplished by holding the ball float down against the bottom of the reservoir and pressing down on the center of the float arm.

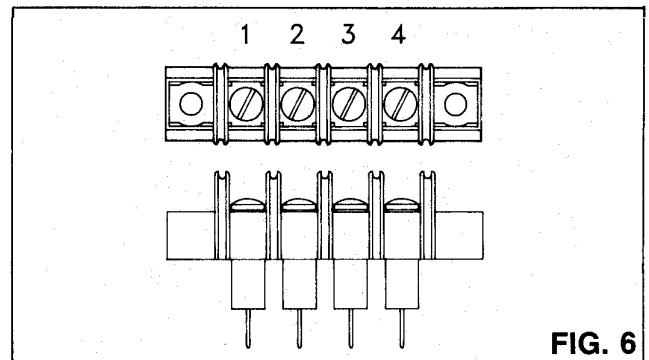
When the water level is correctly set proceed to Step "B".

## B. TESTING THE LOW WATER FLOAT

In the following steps, DO NOT leave the power on for more than one minute or the water may become too hot to manually move the low water float.

Plug the SU power cord into grounded outlet and connect a jumper wire across the two (2) humidistat terminals, 3 and 4, of the low voltage terminal strip, see Figure 6. When the jumper is connected, the heater relay should "click". Pressing down on the low water float, the long "sausage shaped" float, should cause the relay to "click" off. Releasing the low water float should re-energize the relay. The panel lamp should be on when the low water float is up, and off when the low water float is pressed down against the heater element.

To adjust low water float unplug power cord, remove front cover, loosen set screw and position actuator to close low water microswitch when the float is one inch above heater element. Tighten set screw and replace cover.



Disconnect the humidistat jumper wire. The relay should click off and the panel lamp should be off.

During these tests, the water should begin to warm, indicating that the heater element is functioning.

## 6. MOUNTING THE HUMIDIFIER

Place the SU reservoir into the opening in the duct or Under Duct Adaptor, AutoFlo Model 401930, if used, and secure with eight (8) sheet metal screws.

## 7. WIRING THE HUMIDIFIER

NOTE: the humidifier must be installed so that the power connections can be made without the use of an extension cord.

All wiring must be made in accordance with local codes and ordinances. IF YOU HAVE ANY DOUBT ABOUT YOUR ABILITY TO PROPERLY WIRE THIS UNIT, WITHOUT DEFEATING ANY SAFETY CONTROLS OF YOUR FURNACE, A QUALIFIED ELECTRICIAN SHOULD BE CONSULTED.

Because of the high output of the SU humidifier, it must not be operated in ducts or plenums without the blower operating. A thermostat switch is mounted on

the water reservoir to sense the water temperature. As the water temperature increases to about 170 degrees F, the thermostat switch closes. When the humidity requirements have been satisfied, the humidistat will de-energize the heater and the water in the reservoir will begin to cool. When the water cools to about 140 degrees F, the thermostat switch will open. This thermostat switch should be used to cycle the "system" blower.

The thermostat switch connections are located on the low voltage terminal strip, Figure 6, and must be wired only with 24 VAC, NEC Class II power levels. This thermostat switch must be used to interlock the system blower so that the blower will be energized when the water in the reservoir has reached the temperatures mentioned in the previous paragraph. A 24 VAC relay may be required in order to connect to the furnace fan switch, air conditioning or heat pump blower circuitry.

Figure 7A describes a suggested interlock wiring arrangement for heating systems using a furnace with a field relay. If the *interlock* can be performed with only the thermostat switch, Terminals 1 and 2 can be used without the need for a relay. (See Figure 7B).

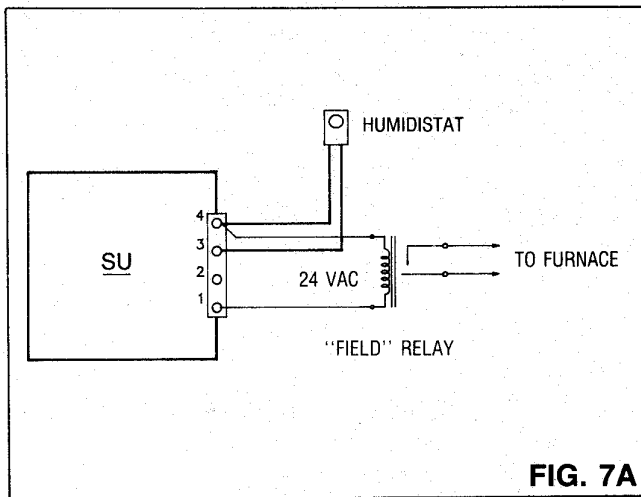


FIG. 7A

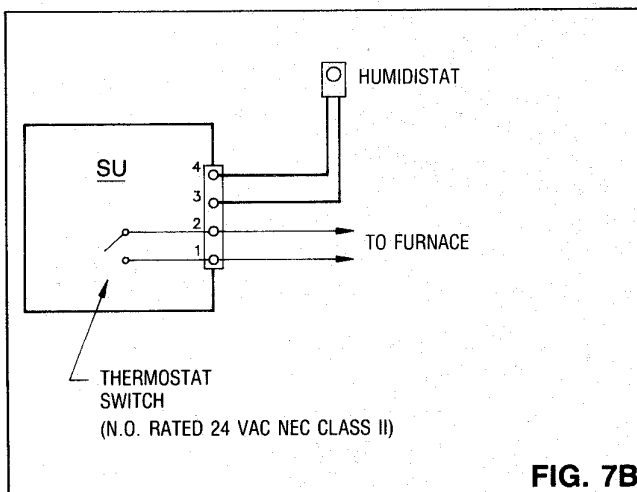


FIG. 7B

The SU humidifier is designed to be "dominant" over the heating-air conditioning system blower. The "system" blower will be operated by the SU when humidity is required to meet the humidistat setting.

On furnaces, the normally open contacts of the "field installed" relay are connected across the furnace fan switch.

Figure 7A displays the field wiring required. The "field" relay must be mounted inside the furnace and all wiring must comply with local codes and ordinances.

Interlocking the SU humidifier to systems employing air conditioning compressors or heat pumps must assure that the compressors are not energized by the humidifier. A second set of contacts on the "field" relay may be required to prevent energizing the compressor. On some heat pump systems an additional "lock-out" relay may be required.

In the case of heat pumps, the compressor is energized by the living space THERMOSTAT when requiring the addition of heat in the winter and cooling in the summer. This may or may not occur at the same time that humidity is being added to the living space. Under these conditions, the interlock circuitry may require additional connections to the heat pump control wiring. The numerous heat pump and HVAC systems on the market today prevent a "standard" wiring approach to interlocking the SU humidifier. The installer must evaluate the interlock requirements for each specific installation. The installer must also verify that the humidifier operation in both the summer and winter (heating and cooling) modes will be compatible with the SU energizing the "system" blower without energizing the compressor.

## 8. INSTALLING & WIRING THE HUMIDISTAT

A humidistat, AutoFlo Models 052000 or 062000, is required to control the SU humidifier. The humidistat may be installed on the wall in the living space or on the return air duct. Instructions for installation are packaged with the humidistat.

The humidistat has two (2) screw terminals which are connected, by wires, to the humidistat terminals on the Low Voltage Terminal Strip, Figure 6, Terminals 3 and 4.

**IMPORTANT:** If the humidistat controlling the unit is installed on the return air duct, it must be located at least three (3) feet upstream from the furnace or heat pump. If the humidifier is in the return air duct the humidistat must be at least three (3) feet upstream from the humidifier.

## 9. OPERATION

When the humidistat signals that an increase in humidity is required, the humidifier will begin heating the water in the stainless steel reservoir. The panel lamp, located above the terminal strip, will be illuminated. When the water temperature reaches about 170 degrees F, the "system" blower will be energized and the moisture generated by the humidifier will be distributed throughout the living space.

When the humidity requirements have been reached, the heater in the humidifier will be de-energized and the water will begin to cool. The "system" blower will continue to operate until the water temperature has decreased to about 140 degrees F.

If the "system" blower has been set to operate continuously, as with electronic air cleaners, the SU will have no effect on the blower; however, the moisture will be controlled as described above.

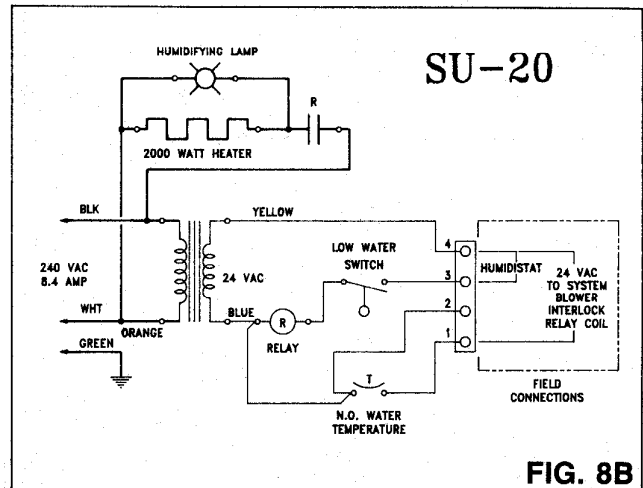
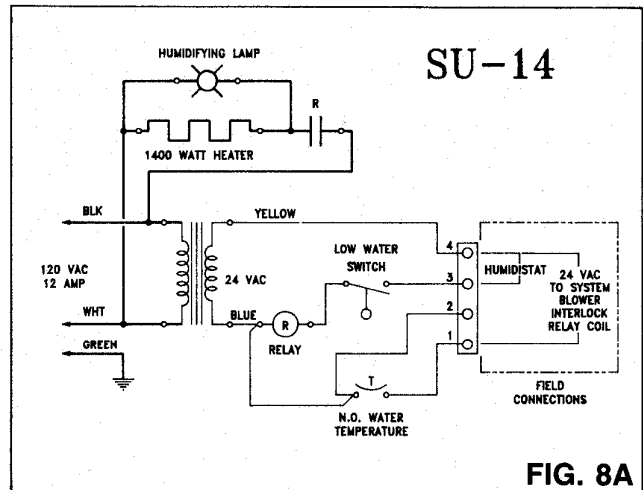
It is recommended that humidistat settings of 30-40% not be exceeded. If condensation is noted, during very cold outside temperatures, the humidistat should be lowered.

## 10. MAINTENANCE

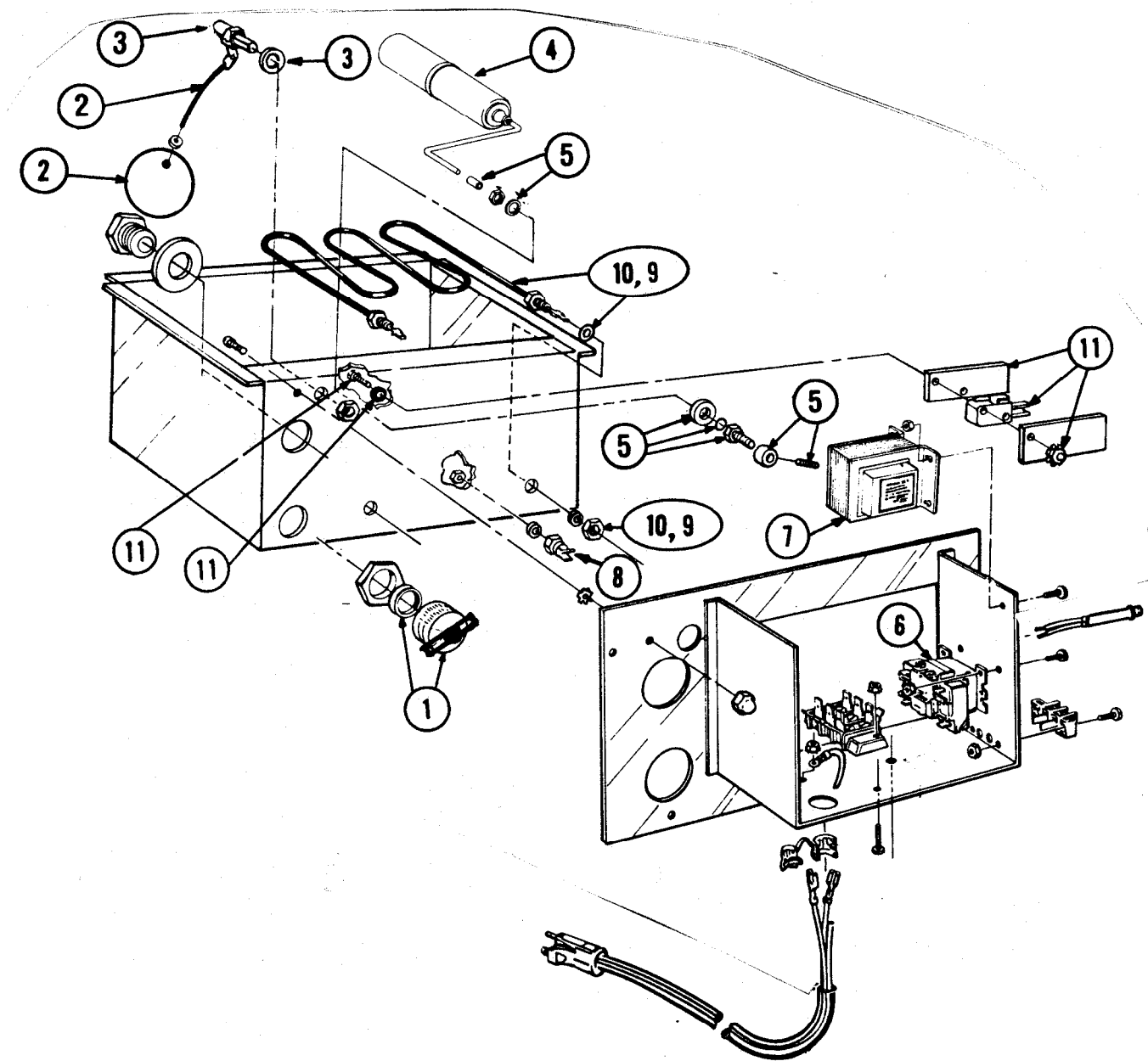
Removal of mineral deposits is required on the SU humidifier in order to optimize the performance and extend heater life. In areas of soft water conditions, this is normally required only once a year. In hard water areas the unit should be cleaned every 30-45 days, depending on the hardness of the water and the severity of the winter. Failure to do so could result in damage to the element and loss of warranty coverage. Maintenance and inspection of the humidifier requires removal of the unit from the duct. This can be done following these steps:

- A. Unplug the power cord from the wall receptacle and allow the water to cool for at least 30 minutes prior to removal.
- B. Turn off the water supply at the saddle tapping valve.
- C. Remove the 3 or 4 wires from the Low Voltage terminal strip. Use masking tape, on the wires, to note the screw terminal number where the wire was connected.
- D. Drain the water with the drain valve or by removing the cap with the drain valve. NOTE: If the drain cap feels hot, wait until it has cooled enough to comfortably handle.
- E. Disconnect the water and drain lines. NOTE: Some water may drain out of the water line. Have a small container available to catch the water.
- F. Remove the eight (8) screws around the front mounting plate.
- G. Slide the humidifier out of the duct or Under Duct Adaptor.
- H. Use a putty knife to scrape the minerals from the sides and bottom of the water reservoir. DO NOT pull up on the "Low Water Float", (located over the heating element). If the Low Water Float is forced up, the float may require readjustment. Carefully scrape the Low Water Float, the Ball Float and the Heater Element to remove mineral deposits. The use of chemicals for cleaning is not recommended.

- I. Rinse out the reservoir. Take care to keep water off of the wiring compartment.
- J. Connect the water line. Check and adjust the water level and the low water float before reinstalling. Refer to Step 5 of these instructions.
- K. Re-install the humidifier. Connect the drain line and the wires to the low voltage terminal strip. Carefully reconnect wires to correct terminals in Step 10C. Turn on the water supply — listen for water filling the reservoir.
- L. Inspect the water connections and drain fittings for leaks.
- M. Plug in the SU power cord to the grounded outlet. DO NOT use an extension cord.



# AutoFlo Model SU14 and SU20



<u>Item No.</u>	<u>Description</u>	<u>Part No.</u>
1	Drain Cap & Valve Assy	401943
2	Ball Float & Arm Assy	401494
	Consists of:	
	1 - Ball Float 1 - Arm	
3	Complete Ball Float & Valve Assy	1521
	Consists of:	
	1 - #2 - 40194-above 1 - Nut	
	1 - Valve 1 - Seal washer	
4	Low Level Float & Arm Assy	401944
	Consists of:	
	1 - Low level Float 1 - Arm	
5	Complete Low level Float Assy	401945
	Consists of:	
	1 - # 4 - 401944- above	
	1 - Nut 2 - Washers	
	1 - Panel Bearing 1 - O.Ring	
	1 - Shaft collar 1 - Set Screw	
6	24 Volt Relay Assy	1549
	Consists of:	
	1 - 24 volt Relay 2 - Screws	
7	120v/24v Transformer Assy	401946
7A	240v/24v Transformer Assy	401947
8	Water Temp/Fan Switch Assy	1581-1
9	Heater Assy - 120v/1400 W	401950
	Consists of:	
	1 - Heater 2 - Washers	
	2 - Nuts	
10	Heater Assy - 240v/ 2000 W	401951
	Consists of:	
	1 - Heater 2 - Washers	
	2 - Nuts	
11	Low Level Float Microswitch Assy	5503
	Consists of:	
	1 - Switch 2 - Insulators	
	2 - Bolts 2 - Washers	
	2 - Nuts	
12	Saddle Valve Assy *	015180A
13	Humidistat *	052000
14	Rubber Seal - Ball Valve *	10001

See Rear - \* Not Pictured